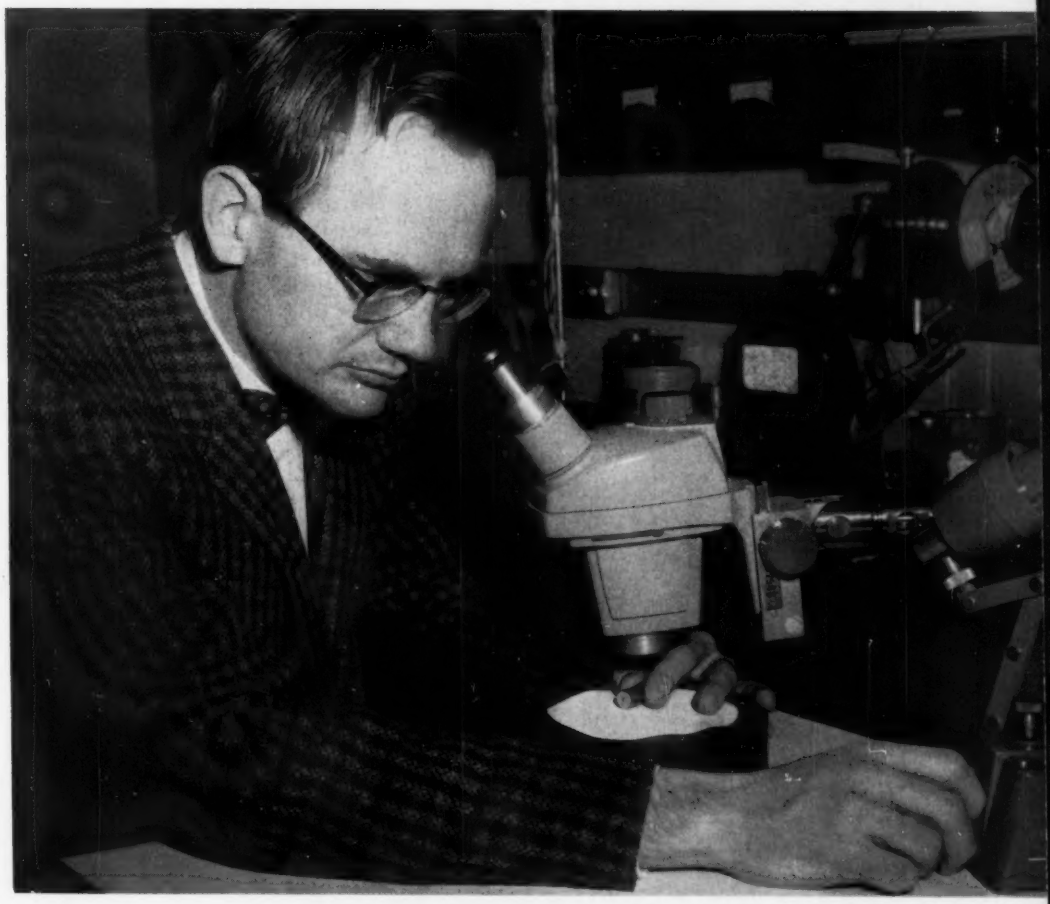
VOL. 160 — NO. 21

MAY 27, 1961

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



D. L. White, of Bell Telephone Laboratories, examines an ultrasonic delay line which uses two depletion layer transducers to generate and detect ultrasonic waves. Transducers facilitate storage of large amounts of information in delay line. See page 24.

Circulation This Issue
14,474 of Which
13,729 Is Paid

MANAGEMENT · PLANT · TRAFFIC · COMMERCIAL · LEGAL · ACCOUNTING

Now in operation at Fordyce, Arkansas A new era in telephone communications opened in the Fordyce Exchange of the Allied Telephone Company, when Arkansas Governor Orval Faubus placed the *first* call through the *first* Stromberg-Carlson PPCS Toll Ticketing System.

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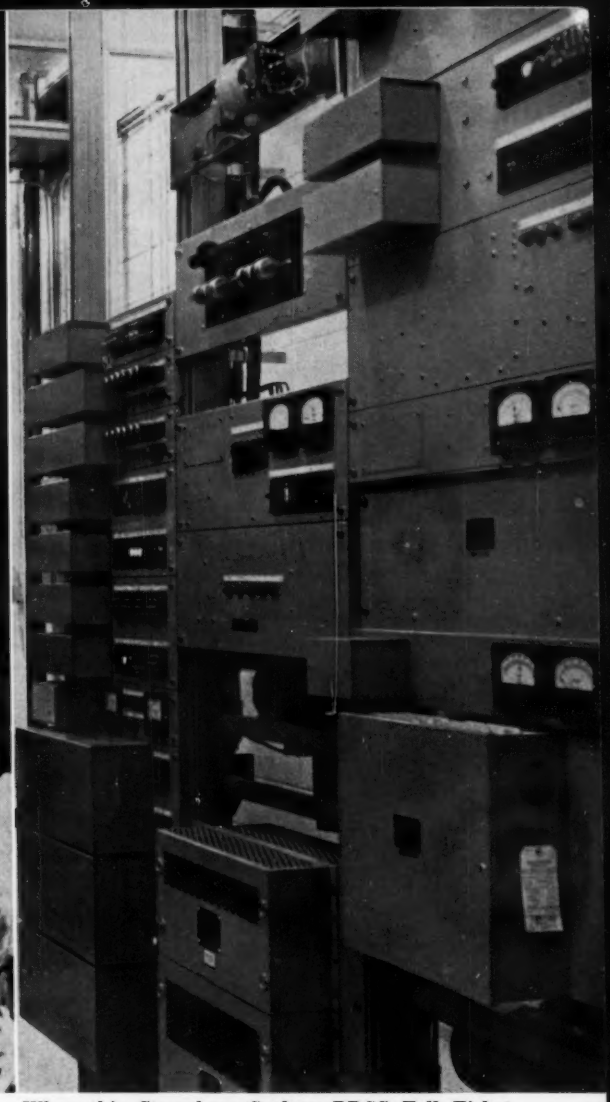
GENERAL DYNAMICS | ELECTRONICS

GD

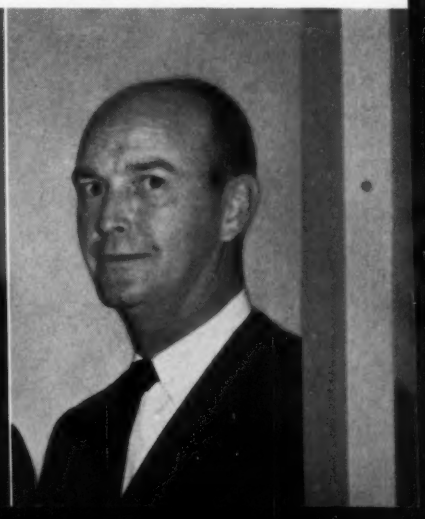
Governor Orval Faubus of Arkansas congratulates officers of Allied Telephone Company and their guests at a dinner marking the cutover of the Fordyce PPCS exchange.



When this Stromberg-Carlson PPCS Toll Ticketing equipment was cut into service at Fordyce, Arkansas, a new era in telephony was inaugurated.

C. B. Miller, President of Allied Telephone Company, puts through a person-to-person call from Fordyce, Arkansas, the *first* Stromberg-Carlson PPCS System, to Weaverville, California, the *second* system cut into service on the same night.

On hand to honor the achievement of Allied Tel are Judge William J. Smith (left), Legislative Assistant to Gov. Faubus, and T.C. "Tommy" Thompson, Stromberg-Carlson Telecommunication General Manager, Commercial Sales.



General Manager H. R. Wilbourn, Jr., a driving force in the organization, relaxes after congratulating General Plant Manager Charles W. Miller and General Commercial Manager Joe T. Ford on the cutover to PPCS.

FLASHES AND PLUGS

SELF-APPOINTED BODYGUARD. In Pittsburgh, Pa., the Associated Press reported that coin-box looters made so much noise in a laundromat that a man living upstairs called them on the laundromat pay telephone and said:

"If you people don't stop making so much noise, I'm going to call the police."

He didn't have to call the police—the burglars left quietly.

•

DAVE COULDN'T — COULD SANTA? Despite all the modern advancements that are affecting the lives of our children, that very old-fashioned character, Santa Claus, intrigues them, not only at the season devoted to his missions, but at other times, when the youngsters get to thinking about Santa's big problems.

In Columbia, S. C., recently, David Bailey, a five-year-old, went out into the back yard to "play Santa Claus," and one hour later, his mother had to telephone the police for assistance.

The police had quite a task before them—they removed a sooty, but unhurt David from the chimney of an outdoor fireplace, where he had obviously been researching a major Santa Claus problem.

•

THE LINES LOVE THOSE LINES! It is reported that two businessmen, John H. Hook and G. E. Line, roomed together at San Diego, Cal. while there on business. Both are from Dayton, O.

Telephoning for one of the pair proved a problem, for when Mr. Line placed a call to his wife in Vandalia, O., he got a busy signal. His wife was trying to reach him at the same time. Both Lines found the lines busy.

•

A POST GRADUATE, MAYBE? Being tolerant and being able to handle gossip morsels offered by the town's busiest gossip are evidently strongly developed talents for this English wife.

The gossip telephoned her and said, "I feel that I should tell you I saw your husband at Blackpool, walking along the beach with a very attractive blond on his arm."

Her quick rejoinder was, "Well, what would you expect him to have on his arm at his age? A pail and shovel?"

•

A-MOVIN' UP. An AP story datelined Toronto reports that a new telephone directory listed under the heading of "Consulates and Other Foreign Government Representatives" a "Bohemian Embassy."

Turns out, the "Bohemian Embassy" is a beatnik coffee house!

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

1901 — 60 years — 1961

May 27, 1961

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Published every week on Saturday by TELEPHONY PUBLISHING CORP., 608 S. Dearborn St., Chicago 5, Ill. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879. 35c per copy (except special issues—50c). Subscription $4.50, 1-year; $7.00, 2-years; $9.00, 3-years. Add $1.00 per year for postage to Canada and Pan American countries; $2.00 per year to Foreign countries. Telephone WAbash 2-2435.

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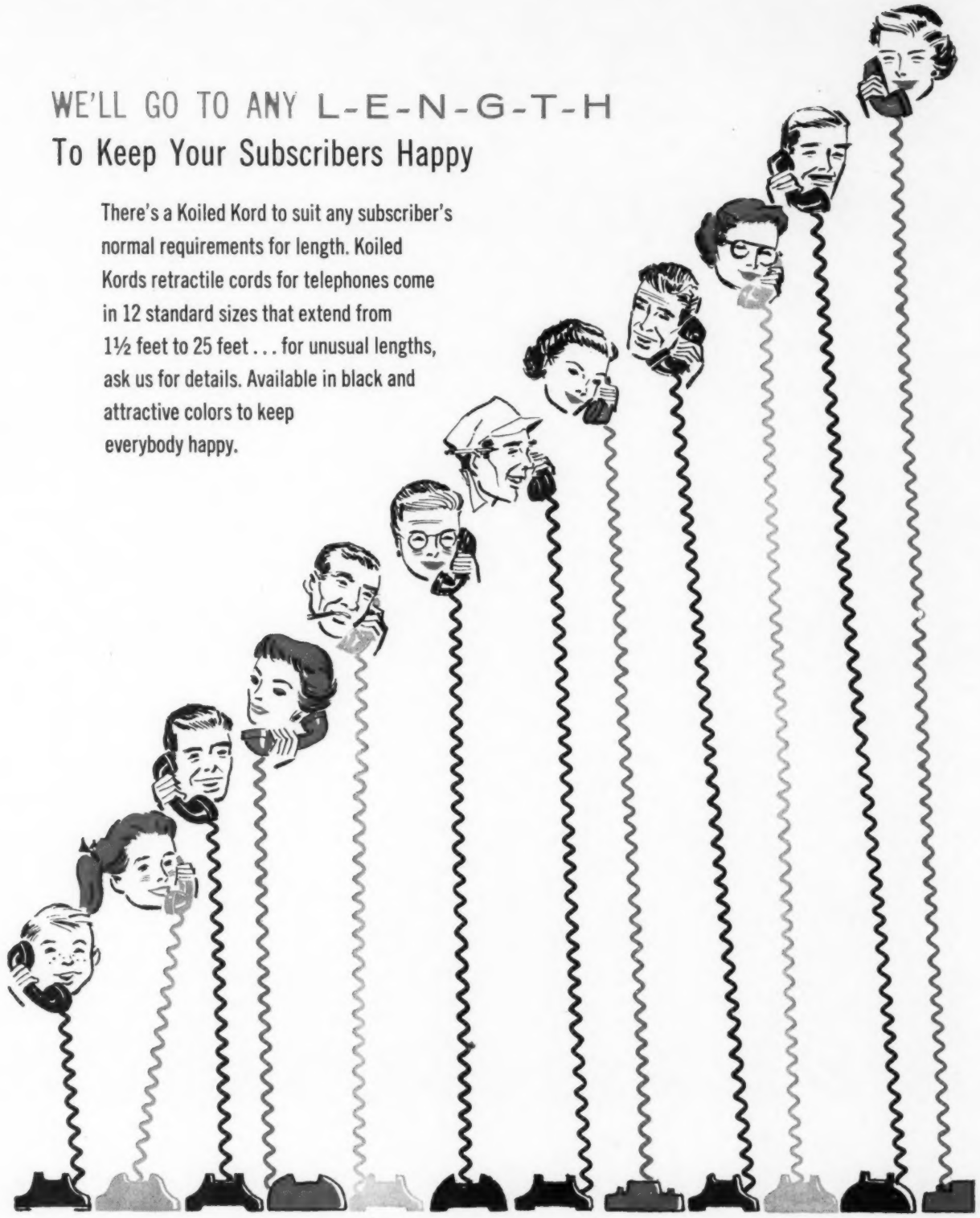

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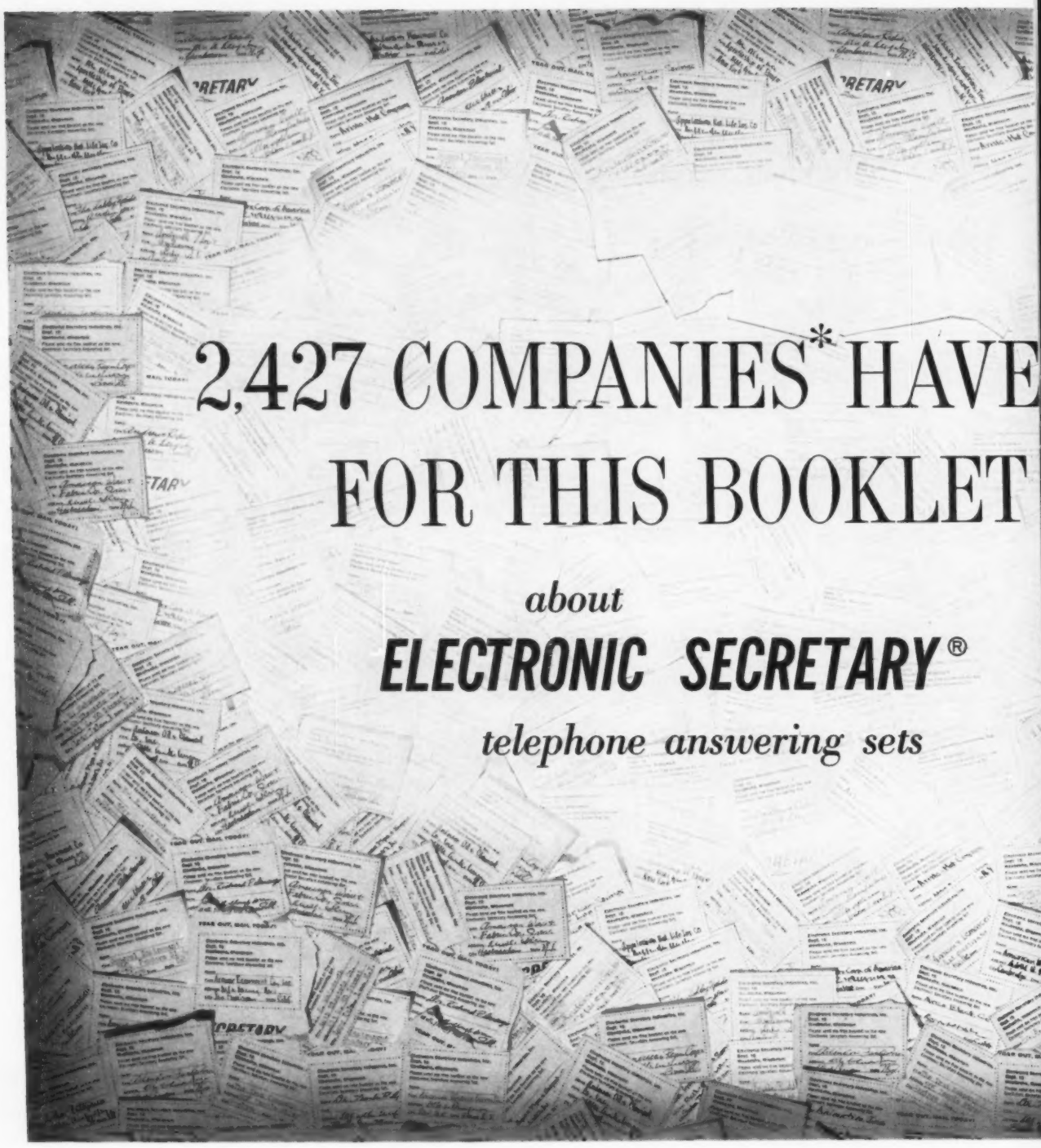

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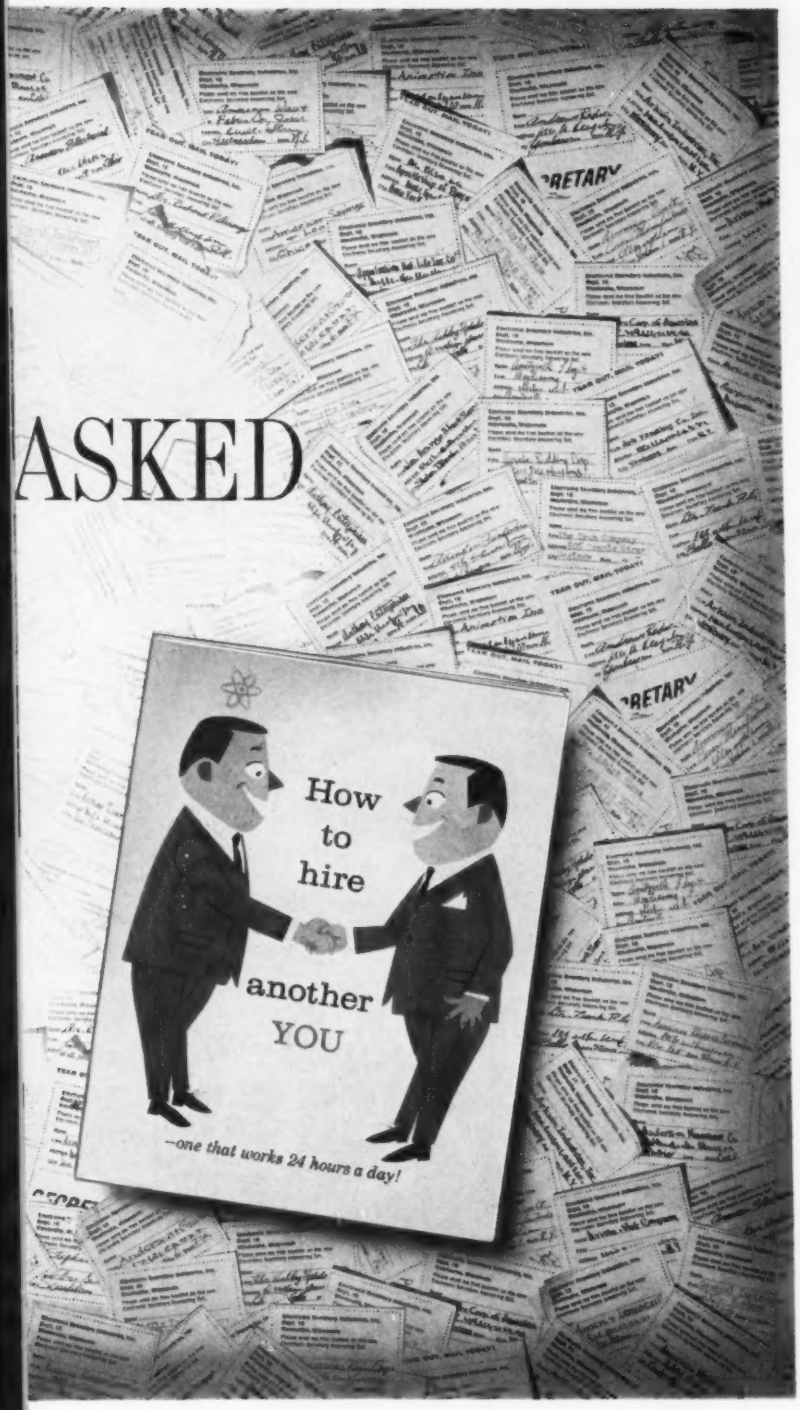
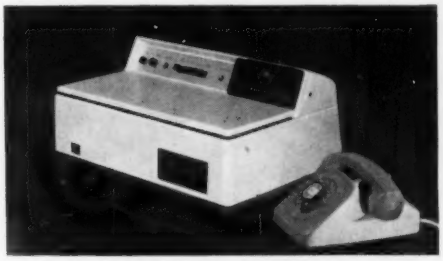


Complete line of ELECTRONIC SECRETARY telephone answering sets will meet every prospect's needs



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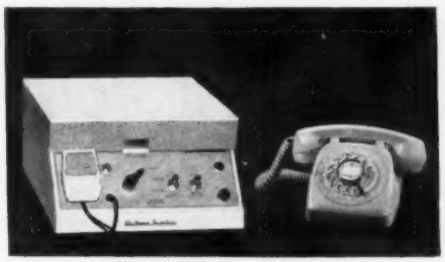

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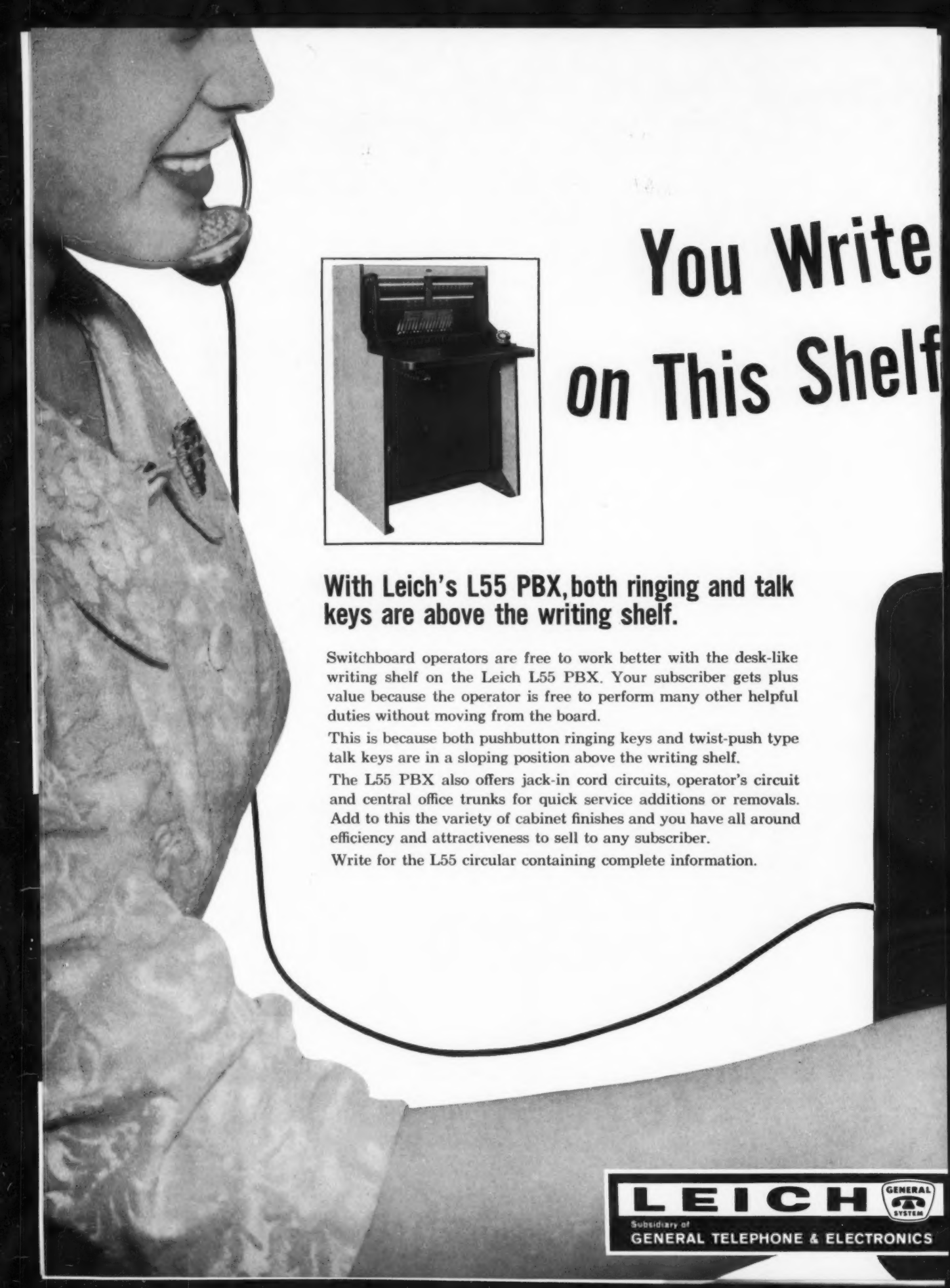

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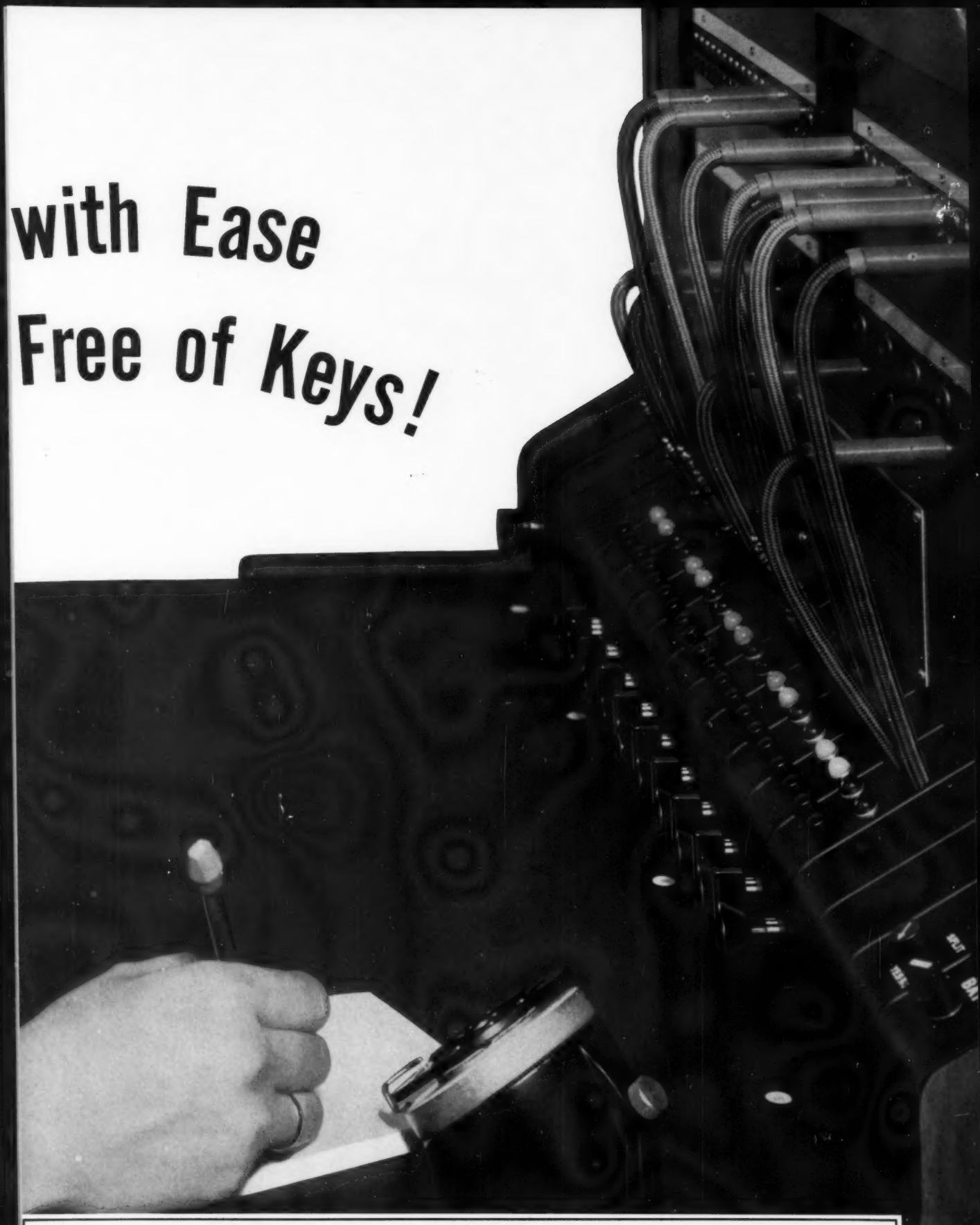

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

FCC reorganization plan may be in trouble following FCC chairman's courageous speech to broadcasters. Senate subcommittee holds hearings on wire tapping. Interest high.

FEDERAL Communications Commission chairman Newton N. Minow is generally credited with having made a very courageous statement before the annual convention of the National Association of Broadcasters when he blasted the excessive and tiresome use of Westerns and gangster programs on television. At the same time, it could be that President Kennedy's handpicked head of the FCC might well have deferred his criticism a couple of weeks, for reasons of legislative strategy.

Perhaps the result will be known by the time these lines appear in print. But sometime towards the end of this month, the House of Representatives is going to vote on President Kennedy's reorganization program for improving the operation of the FCC. Under the ground rules of the newly enacted Reorganization Act, Congress cannot change this plan. Either the House or the Senate can vote it down and that is the end of it. Otherwise it goes into effect. So, the forthcoming vote amounts to a veto verdict.

Whether it will be vetoed, of course, depends on whether there is enough opposition to the plan among the Democratic leaders who are committed to President Kennedy's legislative program generally. The Republicans do not have the strength to do more than swell the vote against the measure.

Two weeks ago this writer would have said that Kennedy's plan for giving the chairman of the FCC greater increased powers for assignment of cases and for delegating decision-making to various levels of the commission (staff, panels of commissioners, as well as the full commission) would have gone through without much of a hitch. This plan was explained in this department (TELEPHONY, May 6).

But as of this writing Kennedy's reorganization plan is not such a cinch. It seems that a good many of the broadcasters went away from their national convention in Washington shaken, frustrated, and in some instances quite angry about Chairman Minow's criticism. Maybe that was a good thing in itself. Too long the pattern of the National Association of Broadcasters at its annual conventions has been to tell the FCC what it ought to be doing to cooperate. Chairman Minow's reversal of the usual pattern was refreshing.

But it did serve to build a fire under Kennedy's plan to reorganize the FCC. There was a good deal of support among broadcasters as well as telephone companies and other industries for the general idea of making the FCC operate in a more business-like manner. But the Kennedy plan focuses a tremendous amount of power in the chairman. And the chairman happens to be Newton N. Minow, the same courageous gentleman who stood up on the National Association of Broadcasters' convention platform and told his host what a mess they were making of television broadcasting.

So even if chairman Minow was right in his criticism, it has caused some of the Congressmen to take a good hard look at the Kennedy plan. "If only it were somebody else who was chairman," one House Democrat said, "they (meaning his colleagues) wouldn't be so concerned."

The Kennedy plan has also run into opposition from some members of the FCC. Among others (besides Minow) who attended closed sessions of the House Interstate Commerce Subcommittee was former Chairman Frederick W. Ford (under Eisenhower), who is still a commissioner. Also present were FCC Commissioner Robert T. Bartley, a nephew of Speaker Sam Rayburn (D., Tex.), and James M. Landis, special assistant to the President.

The House subcommittee has voted to authorize Rep. Oren Harris (D., Ark.), chairman of the full Commerce Committee, to register the subcommittee's opposition at a hearing held later by a House Government Operations subcommittee. The position of the FCC commissioners will be disclosed at this same hearing. Representative Springer (R., Ill.) said the commissioners lined up 5-to-2 against the reorganization plan in secret testimony.

Commissioner Bartley, it was said, voiced fear that the reorganization plan would arm the executive branch with additional power over an independent regulatory agency responsible to Congress. The chairman of the FCC is selected by the President instead of a vote of the commission. At present, the chairman is limited to the administrative tasks specifically given him by the Federal Communications Act. The proposed reorganization would transfer to him all the personnel assignment powers now vested in the commission as a whole.

Speaker Rayburn was understood to take a dim view of this provision. The plan cannot be changed by Congress and must be voted up or down. The

House vote may come next week. Some congressional Democrats said individual broadcasters had "stepped up pressure" against the plan after a speech in which Chairman Minow called television programing a wasteland. He said television licenses no longer would be automatically renewed.

Representative Harris previously had expressed reservations about using the reorganization method — rather than new legislation—to accomplish certain streamlining of FCC procedures which he favors. Representative Springer has predicted that the FCC reorganization would be defeated.

President Kennedy's other plans to reorganize the regulatory agencies seem to be meeting with some congressional opposition. Under the Reorganization Act, the President's plans could go into effect in 60 days provided that neither house has passed a "veto" resolution. Senate Republicans have indicated that they favor full public hearings on the reorganization plans. Resolutions of disapproval already have been filed against the four presidential proposals now before Congress which include the Civil Aeronautics Board, FCC, Federal Trade Commission, and the Securities & Exchange Commission. Republican leaders said this will assure hearings before the appropriate committees.

"Some of the objectives of the proposed reorganization are very good," Chairman Harris stated, "but I can't say I prefer the methods." Representative Springer, a member of the Interstate Commerce Committee, noted that "the party that controls the chairman under these new plans controls the commission. It could be dangerous." Chairman Harris has announced that open hearings on "backdoor influence" in the regulatory agencies will begin before his committee on June 6.

Muses Won't Perform on Order

One of the difficulties which chairman Minow seems to have gotten himself into, and one which has worried many a government official having responsibility over artistic performance —going clear back to the time of Roman Emperor Nero—is how to develop competent, artistic, acceptable entertainment programs by government fiat. It is all very well for Chairman Minow to say that the TV fare, on the whole, has not lived up to the high potential of this miracle form of mass communications. A good many, if not most of us, would agree.

The practical problem, however, is how to produce better programs in sufficient quantity and quality to keep the viewing screens of the nation suitably occupied every day in the year and every hour of the day that the licensed stations are supposed to be on the air. Telephone industry people can sympathize with the problem with which its junior sister communications industry is faced. Television has such an insatiable appetite for entertainment that its schedules cannot be filled unless it is liberally padded with such palpable filler material as to deceive no one, even the kiddies.

Thoughtful observers saw this problem some time ago when it became apparent that a rapidly growing television industry could not live indefinitely on the ash can by-products of Hollywood's superannuated and unwanted surplus films. In the movie industry, as in the theater world, the selective economics of the admission charges takes care of this problem automatically. A prime musical comedy, such as "South Pacific," "My Fair Lady," "Oklahoma," and others, can run for years because theaters can only hold so many at a time. Even with road shows, the substantial charge per ticket keeps the customers in line. Yet, you can take this same sterling type of entertainment and dump it out, free, on the living room floor of 60 million television families and it is used up in a single showing. Thereafter it has only a rerun or revival value.

Television operators were able to get along with surprising success for awhile on such gimmicks as sensational prize money programs and quiz shows. But the inevitable scandals, which anyone could have expected in view of human weakness and frailty, put an end to that. So, where else could the television cameras turn except to the endless and tiresome succession of cowboys and Indians and shoot-'em-up gangster films?

If Chairman Minow or anyone else can come up with a program for development of shows like "My Fair Lady," even at the rate of once a month, it would be a marvelous cultural contribution. But the Muses have notoriously and historically refused to cooperate with bureaucratic or even capitalistic orders and directives. When Stalin ordered the Russian composers to turn out more melodic masterpieces and the Russian painters to top Michelangelo, he was as ridiculous as King Canute ordering the waves of the ocean to recede.

A part of the responsibility must also be placed on people who *operate* television sets. That means most of us.

At least it can be said of TV that it kept the American family at home at a time when the automobile and other distractions were threatening to explode it in all directions at once. But that brings up the sober question: Keep the family home; for what? That question will require some smart answers. And it is probably expecting too much of the television industry or any other single segment of our society or economy to provide all the answers. In other words, if there are too many Western and violent gangster shows on TV, isn't it possible that there are too many kiddies (who have not done their homework) lying around at all hours watching such shows, when they should be in bed, having first said their prayers? Neither the FCC nor the TV industry can be blamed for *that* situation.

Wire Tapping Pops Up Again

Earlier this month in Washington, D. C., a Senate Subcommittee on constitutional rights again took up the thorny problem of telephone wire tapping. Considering the fact that, in this day of induction coils and other electronic devices, old-fashioned wire tapping has become almost primitive, one would expect that not much steam would be left in this issue. But you would never think so, considering the way the Justice Department and other enforcement agencies and civil rights champions tangled with each other over proposed legislation.

The Justice Department kicked off testimony with a plea that the President be given the right to authorize wire tapping in national security cases, and that it is absolutely essential in order to catch and convict spies, saboteurs, kidnappers, and other nasty people. Spokesmen in opposition to the wire tapping bill, including that hardy old perennial, if self-appointed champion of the underdog, the American Civil Liberties Union (ACLU), told Congress recently that to legalize wire tapping "is to move closer toward a police state."

In testimony prepared for the Senate Constitutional Rights Subcommittee, the ACLU called for a total ban on telephone tapping and other electronic eavesdropping. The civil liberties group said wire tapping is uncontrollable in its sweep, even if done only under court order.

Edward Bennett Williams, the famed trial lawyer, also vigorously opposed wire tapping because no judicial controls can safeguard the citizen's privacy. There is always the danger that tappers will listen to conversations between husband and wife, between lawyer and client, and even between penitent and confessor, Williams said. Williams said states such as New York, which permit tapping, are in actual defiance of a 1935 federal law.

Veteran district attorney Frank S.

(Continued on page 44)

PBX Advisers Have a Rewarding Job

By GILBERT R. BRACKETT

IN PREPARING for a private switchboard visit a Service Adviser should have at her fingertips information relative to that particular board, its attendants and customer management. The names of the attendants and the person in charge, date of last visit, conditions found, and corrective action taken at the time, are useful information to study prior to visiting a PBX installation.

The adviser should determine the items she plans to review and discuss with attendants and customer management. Sometimes a visit to the plant department and with the toll chief operator will produce a more complete picture of matters that are related to the PBX being visited.

Approach Is Important

The manner of approach used by the Service Adviser greatly increases the effectiveness of a visit. If she already knows the attendants and management her work is simplified. However, it is a different matter when visiting a new PBX installation and she is a stranger to both the attendants and management.

Start at Top

In such a case, it is best to start at the top and work down. Meet the management personnel first, explain the purpose of the visit and obtain permission to talk with the attendant. During the interview with the executive the Service Adviser has a wonderful opportunity to show an interest in the telephone service given by the establishment, thus creating confidence in her ability. With support from management, cooperation from the attendants will follow normally.

A Service Adviser will accomplish far more with an attendant by friendly suggestions than she ever will with criticism. The adviser who gains the confidence and friendship of the attendants, and continues to merit such appreciation through helpful advice and assistance, will find that she is a welcome visitor and that usually her suggestions are followed.

Three Groups Involved

The Service Adviser works with three distinct groups of telephone users—customer management, extension users and attendants. All three groups must work together in harmony. With dissension between any of these people, collaboration becomes difficult and service deteriorates. The Service Adviser must recognize that she cannot change the personnel in any customer's organization. While her every effort should be directed toward obtaining cooperation, as a telephone company employe, she must tactfully avoid any entanglement that could disturb the cordiality between her company and the PBX customer.

The length of time that should be devoted to a single visit should depend upon the requirements and prevailing conditions at the PBX. Some visits take only a few minutes, others may continue for several hours. It is more effective when the Service Adviser concentrates on one or two items most in need of attention. When too many conditions are brought up for correction at one time the attendant becomes discouraged, and often resentful of the Service Adviser's fault finding. Should the Service Adviser find the attendant too busy to give her the needed attention, she should make arrangements to return at a more favorable time.

Notes After Calls

Notes pertaining to an attendant's work should be made after leaving the customer's premises, never in the presence of the attendant. The Service Adviser must avoid giving the PBX operator the impression that she is "checking up" on her.

New PBX installations should be visited soon after the cut-over. This initial visit will give the Service Adviser an opportunity to establish a worthwhile contact with customer management. This first visit at a new installation has a controlling consequence on the effectiveness of the visits that follow. Contacts that are made to new installations should be carefully thought out and prepared. The first contact usually creates the most favorable impression of the telephone company and the Service Adviser herself.

It is the Service Adviser's responsibility to check certain equipment in order to find out if it is functioning properly, if it is arranged as it should be, and if it is being used effectively and efficiently. She should have the know-how to judge the equipment situation in the light of service requirements. On top of that, she should take positive action to correct faulty usage that is not only uneconomical, but which overloads the equipment.

Adequate Coverage

The Service Adviser should assure herself that the switchboard she visits is adequately covered at all times with properly trained attendants. When traffic is sufficient to warrant it, an analysis of the attendant's operating may be in order to determine the extent to which other duties interfere with the smooth operation of her switchboard. Should the attendant's non-operating duties be such as to affect the switchboard service, the Service Adviser should first try to eliminate the attendant's other duties. If this is not practical, she should suggest a rearrangement of the attendant's work in an attempt to improve the service.

The Service Adviser should ascertain whether or not extension users are following approved telephone technique. These people can contribute a great deal toward their company's reputation for good business methods through their telephone department. Their habits have a definite influence on the quality of the service given at the switchboard and on the cost of the service to their employer. Extension user habits that adversely affect PBX operating should be discussed with the customer management. Should the faulty practices require contact with the individual extension users, extreme care is called for. These people cannot be told what they are to do, they must be won over through suggestion and proof of the error of their way.

There are many, many items that affect service. Any single one probably would not cause too much harm. But an accumulation of irregularities could

bring service criticisms. The Service Adviser should be on the alert for such things as:

Does the attendant use clear, concise phrases to convey her meaning, avoiding meaningless conversation?

Does she thoroughly understand the operation of her switchboard?

Does she answer signals and disconnect promptly and avoid "plug outs?" An explanation on the need for prompt answers to all signals and the discourtesy and costs of a "plug out" are needed if such practices are to be discouraged.

(See *Fig. 1* for PBX check list.)

Often the extension user is slow to answer his telephone. It is primarily the attendant's duty to explain to her people the need for quick response to a telephone call. Also that little courtesies such as answering with the department name or personal name is certain to please the calling party.

The Service Adviser should make certain that all relief attendants thoroughly understand the operation of the switchboard and are familiar with the practices which will promote good service.

Trouble Reports

The attendants should know where to report equipment troubles and that such faults should be reported promptly so the full use of all equipment is assured. The attendants should also know where to report traffic difficulties.

Night connections are important. They are worthless if not established as advertised in the directory. They should be checked occasionally for correctness.

There should be sufficient switchboard and extension equipment for subscriber's needs. The Service Adviser should submit recommendations to service engineers to overcome any shortages.

The attendants should know that proper tone and rising inflection helps to produce a good telephone voice. When a PBX attendant visits the telephone company office, she should be given the privilege of practicing on the tape recorder in the PBX training room in order that she may determine the degree of excellence in her voice. She should also know that improperly adjusted headsets affect both transmission and voice qualities.

Training Attendants

In most cities, the telephone company PBX department keeps a file of applicants for emergency or temporary relief work. The PBX customer manage-

PBX CHECK LIST

		DATE							
	1	Reason for Visit							
	2	Time on Premises							
	3	Time Observe - Instruct							
Equip.	4	Physical Condition							
	5	Bulletins and Markings							
	6	Directories							
	7								
Operating	8	Order Attn. to Signals							
	9	Answering							
	10	Acknowledgment							
	11	Establishing Connections							
	12	Progress Reports							
	13	Recalls and Disc. Sig.							
	14	Transferring Calls							
	15	Ringing and Flashing							
	16	Handling Cords - Keys							
	17	Bat. - Buz. - Gen.							
	18	Est. Night Con.							
	19	Voice and Attitude							
	20	Plugging Out Calls							
	21								
Ext. Practice	22	Call By Number							
	23	Hold Line							
	24	Ask for Trunk							
	25	Slow to Answer							
	26	Ext. Pass Toll Calls							
Force	27	Adequacy							
	28	Furn. by Tel. Co.							
	29	Other Duties							
	30								
Equip. Adequacy	31	Trunks too Busy							
	32	Ext. too Busy							
	33								
Comments	34	Comments - Local							
	35	Comments - Toll							
	36	Comments - Other							
Miscel.	37	Called Number List							
	38	Knows Calls for Assist							
	39	Central Office Visit							
	40	Management Interview							

NAME	ADDRESS	TEL. NO.

Cust. Rep. — Title — Rm. No.

Ch. Opr. — No. Attds. — Bd. Rm.

Bus. — Busy Season — Busy Hours

Type — Finish — Pos. Instld. — Occ.

Trunks - Inc.

Trunks - Out.

Total Tks. — Sp. Jks.

Ext. on Prem. — Off — Total — Dial — Sp. Jks.

Tie Lines

L. D. Term.

Cords - No. — Vari-Colored - Yes — No — Thru. Sup. — Yes — No

Board Location, Satisfactory

Special Equipment

Remarks

Fig. 1. This PBX check list form (two sides), if used, will indicate to the Service Adviser a month-to-month delineation of the service department of any given PBX under her supervision.

ment should know of this service, and also that when its company employs an inexperienced attendant the Service Adviser will take over her training at no cost to his company.

On a visit to a PBX, the Service Adviser should check all designation cards for legibility and all cellulose windows for clearness and imperfections.

Today, with the rapid advancement of mechanization in both local and toll services, it behooves the attendant to keep all records as up to date as possible. Her out-of-town directory must be correct in every detail and legible. The keyshelf directory units, underglass bulletin orders, or other visible files, should be kept up-to-date and easily accessible.

Calls by Number

All calls should be placed by number. The extension user should stay on the line after placing a call. The attendant who requests time and charges is wasting her time, trunk circuit time, and a very busy toll operator's time, and gains nothing by doing so. She is merely duplicating the work that is being done in the central office, work that is available for her inspection upon request.

An attendant should never be called upon to dial outside numbers for her extension users. It is one of the most discourteous and wasteful practices. It wastes operating time, circuit time, and executive time. It is exceptionally discourteous for the caller to demand that the party he calls be on the line before he will talk. I have known many business men who will not tolerate such incivility. Many times I have heard them say something along the lines: "My time is just as valuable to myself and to my company as the caller's time is to his company. I just hang up and wait until he is ready to talk!"

Checks on Equipment

The Service Adviser should check the condition of the equipment. For example:

Are there any frayed cords, or worn, dirty or corroded plugs?

Do plugs stick in plug seats?

Are supervisory or line lamps so dim as to cause difficulty in being sure of the signal?

Are any lamp caps missing or broken?

Is the switchboard neat, and are keyshelves free of obstacles that might cover signals?

Is the face of the switchboard "messed up" with notes and memos stuck to its surface? (If so, there is a good chance here to replace the untidy and careless method with visible files.)

Does attendant keep flowers on switchboard?

Does she drink any liquids at the board? Is the dial speed correct?

Does attendant report equipment irregularities promptly?

Does attendant make or receive any personal calls while at her switchboard?

If the PBX is a dial installation the Service Adviser should make sure that both attendants and extension users understand they cannot "flash" the operator on outgoing calls. They should also accept the "busy" signal as being correct and except in an emergency, they should not dial the operator for verification.

Appearance Important

The Service Adviser should attempt to eliminate conditions which could cause adverse comment or criticism. The customer's active interest and support should be encouraged in developing the best use of their telephone equipment. She should satisfy herself that the PBX management and attendants are familiar with the services offered by the telephone company and how to reach her when traffic assistance is needed.

A Service Adviser should always look her best. Neatness in her dress and a business-like attitude helps win the confidence of others. Appearance reflects ability and assurance, two requisites which are necessary to competent leadership.

She should be a good listener, genuinely interested in her job and her PBX people. She should maintain a dignity without being stiff, overbearing or displaying a superior attitude. She should have a pleasant personality and use it wisely when contacting her PBX friends.

Telephone Calls OK

The attitude of the customer's management toward PBX service development is influenced a great deal by the manner in which the Service Adviser interprets and presents what her company has to offer. She should make every effort to win the respect and approval of customer management, not only for herself but for her company as well.

Whenever a telephone call will do the job, it should be made in preference to a visit. However, contact by telephone demands good judgment, based on a knowledge of the attendant to be visited and the nature of the business to be discussed. Telephone contacts help to plan daily activities and to keep them well balanced. It makes the visit program so flexible that the most important things will be done first.

Two types of operator sets are available for use at a PBX switchboard—the common headset and the handset. Care should be used in choosing the type of set that will be best suited to the particular PBX. Key or cordless boards have handsets as standard equipment. One-position cord boards are generally supplied with headsets. On busy boards, headsets are preferable because they permit two-handed and overlap operations.

Should the full time of the attendant be required for operating during the busy hour only, and a large part of her time doing other work during the slack hours, the customer should be encouraged to have provided a handset as well as a headset. But a handset should be recommended in addition to a headset only when it seems certain that such an arrangement will be of good use to the attendant and not adversely affect the service. The Service Adviser should be the one to approve the type of headset to be installed.

Personal Observation

The most reliable information on an attendant's performance is arrived at by personal observation. It should be the plan of the Service Adviser to schedule a portion of her visit-time to a PBX for observing calls in sufficient number to give an idea of overall results. Service Advisers may find it helpful in checking a certain PBX occasionally to visit other PBX's having similar difficulties and discuss improvement activities with the other attendants. To appraise results effectively by personal observation, calls for the Service Adviser having in mind those features which usually create favorable impressions and concentrating on whether the attendant makes full use of the opportunities presented.

Attendants Know Troubles

The observations should include the attendant's general manner, voice, attitude and phraseology in dealing with her customers and extension users. Overall results should be appraised in terms of the extent to which a positive appreciation, rather than a neutral impression of the service, is being produced. Such a viewpoint is essential to the achievement of the best results in giving a service that sparkles with attention, cheerfulness and responsiveness to the caller's needs.

The attendant is in the best position to discover extension users whose facilities or habits of usage cause poor service, and it should be one of the main functions of the Service Adviser to ascertain which extension users are guilty of practicing such irregularities so that the proper action may be taken. The effectiveness of the corrective measures will in a great part depend upon the accuracy and completeness of the information furnished.

(Continued on page 34)

Locating Trouble in Stalpeth Cable

By RAY BLAIN

WHEN THE EXPLORING coil method is used for locating trouble in Stalpeth cable, the steel covering always reduces the tone volume. It is, therefore, necessary to connect an efficient amplifier between the exploring coil and the receiver to increase the volume. Double headset receivers also prove helpful when working with a weak tone, in a high wind, or on a noisy street.

The results of using various types of test equipment on Stalpeth cable are indicated in *Fig. 1*. The Stewart and Western Electric 20-C tone sets, and similar sets of other manufacturers, have a sharp wave peak and a high volume output. When these sets are connected to a trouble pair in a cable, they are likely to cause interference on adjacent pairs. The Western Electric 76-C test set, which generates a 1,000-cycle tone with a 7-cycle warble, does not cause this type of interference.

When the tone is connected to crossed pairs 1 and 3 in *Fig. 1*, a tone of good volume will generally be heard along the cable until the cross is passed. This is due to the fact that the pairs are well separated. When the Stewart or WE 20-C sets are connected in this manner, we can rate the tone volume as 100 per cent. When using the WE 76-C set, the volume would be rated at approximately 30 per cent. This is not intended to imply that the 76-C set is not efficient, but rather that it is different.

When the trouble is a cross between adjacent pairs 4 and 5 in *Fig. 1*, the tone volume with the Stewart or the WE 20-C will be rated approximately 50 per cent. Then, with the tone connected for a short circuit on pair 6 *(Fig. 1)*, the tone volume will be rated only 10 per cent. When using the WE 76-C set for locating shorts or crosses on pairs widely separated in the cable, the tone volume will be about 30 per cent of that obtained when using the Stewart or WE 20-C under identical conditions. When the pairs under test are adjacent, as 4 and 5 in *Fig. 1*, the tone volume will be only about 15 per cent of that heard on widely separated pairs.

Furthermore, when locating a short, the tone volume will be only about 5 per cent as compared to crosses on widely separated pairs. This is not intended to class any one type of tone set as unsatisfactory. However, the selection of the correct type to perform a specific task is always most important.

The manner in which pairs may change position within a splice closure is indicated in *Fig. 2*. If the tone is connected for a cross between pairs 4 and 2, it will be heard louder along the cable in the direction of B than toward A. This is because of the fact that the pairs are adjacent in direction A and widely separated in direction B.

It is also indicated in *Fig. 2* that pairs may be connected through a splice in an adjacent position. The condition indicated in *Fig. 2* frequently causes splices to be opened unnecessarily in

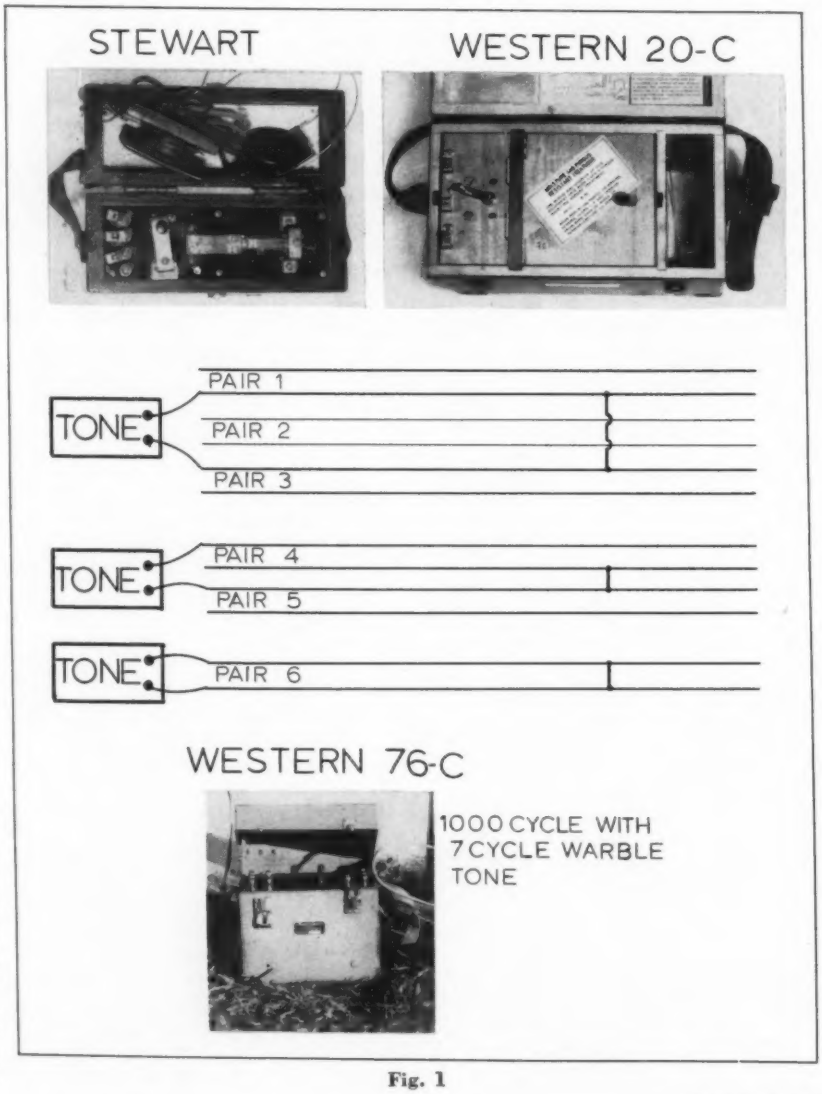


Fig. 1

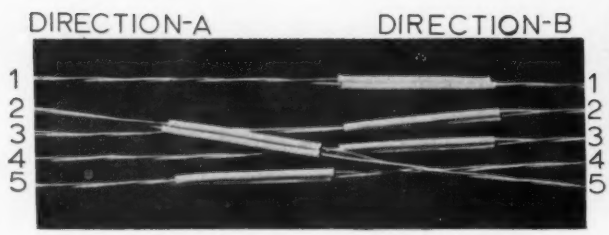


Fig. 2

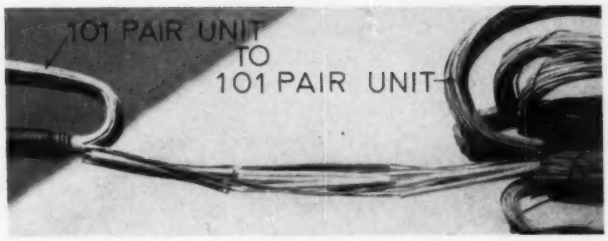


Fig. 3

the location of trouble. This is because the tone volume changes as the pairs change positions in the splice closure.

A 101-pair Stalpeth cable spliced to 101 pairs of a 606-pair cable is shown in *Fig. 3*. In this case, if the tone is connected to a pair in the 101-pair cable for the purpose of locating a short, the volume of the tone heard along the cable will diminish considerably as the pair passes through the splice. This is because of the great distance from the outside of the cable to the trouble pair. The tone may reduce in volume to such an extent that the splice is opened only to learn that the trouble is beyond in the 606-pair cable.

Stalpeth cable spliced to lead or aluminum-sheath cable is shown in *Fig. 4*. Here, again, the tone volume will be reduced considerably at the splice between the two types if the tone set is connected to pairs in the aluminum-sheathed cable. This is due to the effect that the different types of sheaths have on the tone.

Prior to initiating action in the location of any type of cable trouble, the nature of the fault should be thoroughly analyzed, suitable test equipment selected, and the correct procedure adopted. The present-day method of locating moisture trouble is to break down the fault with a high voltage to weld the conductors together. The tone and exploring coil can then be used to locate the short and its associated wet spot. Because of the proximity of the two conductors of a pair, they are usually easier to weld together to form a short than are the conductors of two pairs to form a cross.

It always proves extremely difficult to break down a moisture fault to ground. Moreover, the finer gauges with less insulation will break down easier than heavy gauges with heavier insulation. It also proves extremely difficult, and often impossible, to break down faults in plastic-insulated cable by the high voltage method.

Transformer-type breakdown sets are available which, in some cases, prove more efficient than the battery-operated type. However, they require commercial power to operate, which is not always available in the field. Transformer-type sets can be used in many locations to save the more expensive battery-type equipment.

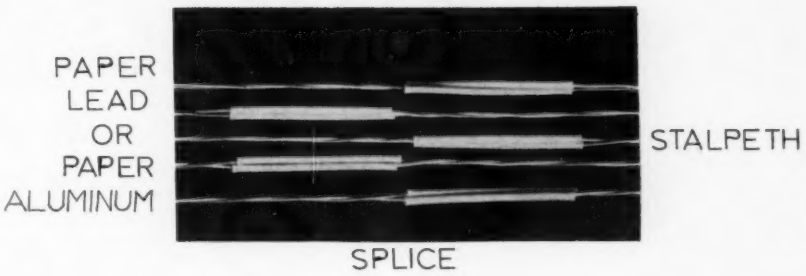


Fig. 4

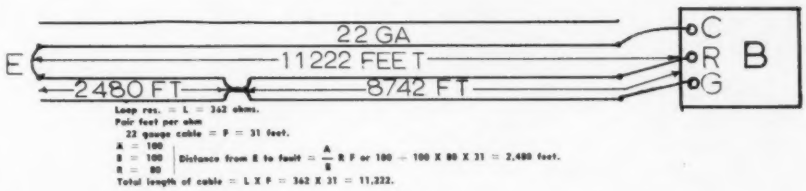

22 GA
11222 FEET
E
2480 FT
8742 FT
C
R
G
B
Loop res. = L = 362 ohms.
Pair feet per ohm
22 gauge cable = P = 31 feet.
A = 100
B = 100
R = 80
Distance from E to fault = A/B R P or 100 ÷ 100 X 80 X 31 = 2,480 feet.
Total length of cable = L X P = 362 X 31 = 11,222.

Fig. 5

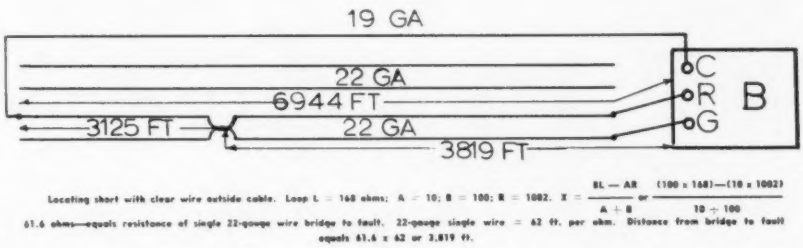

19 GA
22 GA
6944 FT
3125 FT
22 GA
3819 FT
C
R
G
B
Locating short with clear wire outside cable. Loop L = 168 ohms; A = 10; B = 100; R = 1082. X = BL — AR / A + B or (100 x 168)—(10 x 1082) / 10 + 100
61.6 ohms—equals resistance of single 22-gauge wire bridge to fault. 22-gauge single wire = 62 ft. per ohm. Distance from bridge to fault equals 61.6 x 62 or 3,819 ft.

Fig. 6

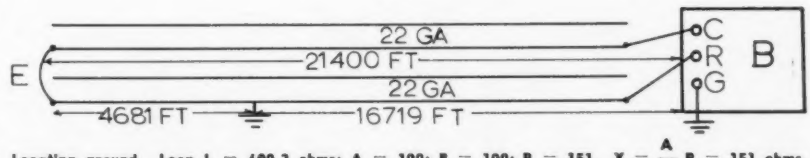

22 GA
21400 FT
22 GA
E
4681 FT
16719 FT
C
R
G
B
Locating ground. Loop L = 690.3 ohms; A = 100; B = 100; R = 151. X = A/B R = 151 ohms.
Distance from E to fault = 151 x 31 = 4,681 Ft.

Fig. 7

When a pair has been welded together by the breakdown method, it is always desirable to measure the resistance from the tone location to the short. This can be accomplished by the use of a conventional ohmmeter which is known to be reasonably accurate. Then the distance to the fault from a "feet per ohm table" for the gauge of cable involved can be calculated. While this method will not pinpoint the actual trouble, it will provide a reasonably good indication as to the general area of the fault and will save considerable time in unnecessary checking with the tone.

If the pair selected for breakdown in a moisture fault happens to be one that has previously had the insulation damaged by dialing or ringing current, the conductors will easily weld a solid short. If, however, the moisture is dis-

(Continued on page 31)

Ohioans Hold Idea Fair

"TELEPHONY'S Idea Fair" was the theme for the 66th annual convention of the Ohio Independent Telephone Association, when it convened in Columbus, Apr. 18 and 19. Robert D. Gott, secretary-treasurer of the Wellington Telephone Co., presided.

Seven hundred and thirty-seven telephone men and women registered for the Ohio meeting, setting an all-time high attendance record. The first official function of the convention was the keynote luncheon on Apr. 18. Weldon W. Case, president, Mid-Continent Telephone Corp., Elyria, introduced James D. McLean, president, General Dynamics/Electronics, Rochester, N. Y., as the keynote speaker.

Mr. McLean chose as his topic, "The Fourth Phase of Telephony." This fourth phase, which he said has come upon the telephone industry much sooner than prophesied, is "electronic switching."

He told the Ohioans that the economics of this new type of operation need hold no fears for them. "Estimated costs," he stated, "have been revised downward so many times that even electronic computers can't keep up with the changes."

"We showed a prototype electronic PEBX at the USITA (convention) last October," he reported, adding, "We will install a test unit in a customer's location the middle of this year, and expect to be on the market in 1962. This will cost no more than conventional electromechanical equipment and will be compatible with electromechanical equipment."

Space saving, he stressed, would be tremendous. He said, "A 500-line PEBX can be housed in 8 square feet."

Holding up an extremely thin quarter-inch square of glass, Mr. McLean explained that on it were six capacitators, five condensers and four transistors. This, he said, was an example of microminiaturization and would perform the function of a much larger circuit now in use.

Accompanying advances in switching operations will come a host of subscriber services and equipment, he forecast. A day will come, he said, when long distance calls won't cost any extra and when a telephone will have a gentle chirp instead of a bell.

Looking at the telephone industry in Ohio, Mr. McLean remarked that "A forward-looking public service commission in Ohio has a fine record of regard for the problems of the telephone business, and will certainly now need to take into account these developments and provide the accelerated depreciation

Officers and directors of the Ohio Independent Telephone Association are shown at the reorganizational meeting of the board. Seated, left to right: Howard Wright of Ashtabula, newly elected president; Col. William C. Henry of Bellevue; J. D. Parks of Kenton; Col. David McC. McKell of Chillicothe; Clarence A. Beswick of Geneva; Richard R. Waltz of Delta; Coyne C. Bloom of Sycamore; and H. F. Clapper of Greenville.

Standing, left to right: Robert D. Gott of Wellington, immediate past president; James C. Hageman of Lorain; Weldon W. Case of Elyria; Clare E. Williams of Marion; Robert P. Kaufman of Continental; James I. Hunt of Middlefield; and Daniel W. DeHayes, executive vice president and secretary-treasurer.

Directors who were not present when the photo was taken were Ralph F. Mateer of Warren; George B. Quatman of Lima, newly elected vice president; Raymond J. Maxwell of Mansfield, and J. Warren Safford of Troy.

Puts profits within easy reach

The convenience of mobile communications without disturbing vehicle comfort, appearance or safety . . . this is what you can offer subscribers with the new 150 Mc AChieverfone mobile radiotelephone by AC.

The AChieverfone control head is only $4\frac{1}{16}$" high, 6" deep and $8\frac{7}{8}$" wide (including handset). This means that it can be positioned *anywhere* on or under the dash, on the transmission hump or even in some glove compartments. Furthermore, the AChieverfone control head never impairs driver vision or crowds front seat passengers.

The AChieverfone is as modern and attractive as today's newest household telephones. Compact cars or limousines, AChieverfone blends with all car interiors, yet it's rugged enough for the cab of a construction truck!

Attractive styling and compact design are only part of the AChieverfone story. Pushbutton-controlled four-channel capability, proven reliability, low initial and operating costs, and fast, easy installation make it the most imitated mobile radiotelephone on the market.

Let an AC sales engineer personally demonstrate the AChieverfone for you. Write or call AC today.

SPECIFICATIONS—FCC Type Accepted

Transmitter: 144-174 Mc, 4-channel
RF output: 22.5 watts into 52 ohm load

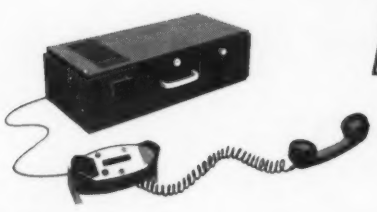
Receiver: 144-174 Mc, 4-channel
Wide Band (60 kc) or Narrow Band (30 kc) models available (Bands converted to Narrow or Wide by substituting IF filter)

Frequency Stability: within 0.0005%

Selective Signaling: 51,000 five-digit (compatible, 2-tone sequential) codes available

Size: Receiver-Transmitter, $21\frac{1}{16}$" x $8\frac{7}{8}$" x $6\frac{1}{4}$"

Weight: 37.25 pounds, including receiver-transmitter, control head and cable



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LEFT PHOTO: Four of the seven receiving Group Safety awards, which were presented at the Ohio convention, are pictured displaying their framed certificates from the Industrial Commission of Ohio, Division of Safety and Hygiene. Left to right: Paul Kaufman of Bellevue; Robert Bonnar of Ashtabula; Carl F. Olson of Lorain and William D. Watson of Kenton. RIGHT PHOTO: Traffic panel participants in "Tone of Service" discussion are, left to right: Dr. Paul Carmack, department of speech, The Ohio State University, Columbus; Mary Smith, traffic department, Ohio Bell Telephone Co., Columbus; Mrs. Florence Gaskalla, chief operator, Elyria Telephone Co.; and Mrs. Mildred Kosanovic, traffic department, Ohio Bell Telephone Co., Columbus.

necessary to permit the operating companies a good return. Shorter time cycles are the order of the day; 15 to 20 years obsolescence is a thing of the past."

Financial needs have been changing, he pointed out. He said:

"Ten years ago many companies needed expansion and conversion capital. . . . In Ohio, with 87 per cent of plants converted to dial and the population explosion bulging your walls, needs are different.

"Equity capital is now a primary need, and fortunately times and business climate are right to secure it; telephone enterprises have proved in as sound investment. There are buyers in the market place — you can choose whether to sell outright, or remain in management and sell or combine with others."

He predicted that a population explosion will hit in 1964-65 and telephone companies will have demands for services such as never before.

New techniques of carrier, time-division multiplex-tone signaling, etc. will come. "These and other improvements," Mr. McLean emphasized, "will open up new sources of revenue. Plan for these changes and be ready to reap the benefits."

Following Mr. McLean's message, the regular afternoon program began. Edward Kenealy, chairman, Public Utilities Commission of Ohio, Columbus, extended greetings to the assembled delegates.

Joseph A. Richardson, general manager, Ford Motor Co. Assembly Plant, Mahwah, N. J., analyzed the problems as well as the advantages of "Industrial and Community Development."

Mr. Richardson, formerly general manager of the Lorain, O., Ford plant, has taken the lead in industrial and community development in several cities where he has resided and he spoke from his own experiences.

Richardson challenged the telephone industry to be aware of the pitfalls as well as the benefits of bringing new industries to a given community. He urged telephone people to be active participants on community development committees.

Mr. Richardson was introduced by James C. Hageman, president, Lorain Telephone Co.

On the morning of the 19th, 60 members of the Buckeye State Chapter of the Independent Telephone Pioneer Association met for a "country-style" breakfast. The Pioneers were given some helpful hints on living in these strenuous times by Walter Seifert of Farmer, Nichols & Seifert, Columbus public relations firm. Mr. Seifert's subject was "Attitudes Are Ammunition."

Mrs. Ruth Dutch, Buckeye State Chapter president, and commercial manager, Elyria Telephone Co., presided over the annual business meeting.

New officers elected to guide the chapter through the coming year are H. M. DeGroff, Troy-Tipp Telephone, Inc., Troy, president; Robert Shelton, Commonwealth Telephone Co. of Ohio, Athens, vice president; and Galen Klepinger, Troy-Tipp Telephone, Inc., secretary-treasurer.

New Board members elected for one year are: J. Warren Safford, Troy-Tipp Telephone, Inc.; Paul Kaufman, Northern Ohio Telephone Co., Bellevue,

(Continued on page 41)

Members of the Ohio association's convention hospitality committee give a genuine "country-style" welcome to Mr. and Mrs. John A. Aigler, Northern O. Telephone Co., Bellevue, as they arrive at the "Buckeye Hoedown" hospitality party. Host George Knapic, Warren Telephone Co., is on the left, and Ed. T. Loughridge, Mansfield Telephone Co., and Varner J. Gaskins, Chillicothe Telephone Co., are on the right.

BY PAUL E. MURPHY, ELECTRONICS EDITOR

PAGING SERVICE

AN ELECTRONIC paging system developed by Stromberg-Carlson, now a part of General Dynamics/Electronics, has for some time been used by various companies as an auto-call system to inform personnel that they are to report to a predetermined location or call a predetermined party by telephone. Other commands may also be indicated by the dispatch signal.

For industrial uses of this nature, a small encoder is placed at the PBX operator's position, or as required. The encoder is then connected by wires to a low-powered transmitter operating in the Citizens Band above 25 megacycles. The receiving source of this transmitter is a miniaturized regenerative receiver—weighing approximately 7 ounces and measuring approximately 5¾ inches x 2¾ inches x 1 inch—to be carried in the pocket of the person subject to call.

In operation, the operator selects a sequence of three audio frequencies, which are used to modulate the transmitter, by the adjustment of three control knobs located on the face of the encoder. Each of the three knobs may be set on any number, one through nine; thus any one of nine discrete audio tones may be produced for a given control knob setting. By selecting a different number for each control knob, as was previously stated, three different audio frequencies are used to modulate the transmitter. Therefore, as one can imagine, each subscriber pocket receiver has a given pre-assigned three-digit number, such as 719, 654, etc.

In the pocket receiver, the received signal is decoded and the audio frequencies are used to actuate three series-fed vibrating reeds, and upon actuating these reeds in the proper sequence, a transistorized audio oscillator is shocked into a state of oscillation. The audio oscillator is then used to drive a small speaker which emits a tone to indicate to the subscriber that he is being paged. The subscriber then negotiates the command as previously determined.

Features incorporated within the encoder permit paging of four subscribers simultaneously through the provision of four banks of control knobs. Associated with each bank is a motor-driven cam switch which interrogates the pre-set positions of each of three control knobs. During this interval of interrogation the proper audio frequency is derived to modulate the transmitter, which at the same time is keyed into operation by an energizing source of power supplied through contacts of a relay located within the encoder. Each bank is interrogated every 20 seconds.

The Bell System and several Independent companies have installed electronic paging systems using the basic principles as described but incorporating many new ideas. The Bell System designates its new service "Bellboy," while some Independent companies refer to the service as "Pagemaster," a name given by General Dynamics/Electronics, the manufacturer.

The new service is being provided by telephone companies to function the same as previously described. It is a one-way signaling service which may be considered an extension of the bell of a subscribers' office or residence telephone.

A typical situation finds the doctor away from his office calling on patients. During this time, the hospital staff desires to consult with him. A call is placed to his office, where the nurse advises that the doctor is away from the office but that she will have him contact the hospital at the earliest possible moment.

The nurse then calls the "Pagemaster" operator and advises her that she wishes to signal "xxx," the pre-assigned number of the doctor. (Several telephone companies assign four-digit numbers and thus have pocket receivers that respond to the four-digit number). The operator then selects the number through either the adjustment of controls located on the face of an encoder, as was previously discussed, or by dialing the number into an idle signaling trunk from the switchboard in the usual manner. This latter procedure is a method now being used in many instances and has the more common telephone approach.

The sequences of selected audio frequencies are then sent over connecting wires to a transmitter from which a signal is supplied to the antenna, radiated and picked-up by receivers carried by the subscribers. The receiver having the pre-assigned number responds to the selected signals and emits a tone as was previously discussed. Upon receipt of the encoded signal, the doctor calls his office and obtains the message.

Some telephone companies, however, find it desirable to use the manual encoder because of (1) lower first costs, and (2) the opportunity to convert to the dial arrangement

at a later date, after gaining considerable experience from the new service, especially as regards number of subscribers and operating conditions. The Bell System used the same approach during the initial phasing-in period in the Bell Telephone Co. of Pennsylvania's Allentown-Bethlehem area, where a 4-knob encoder was utilized for the new service.

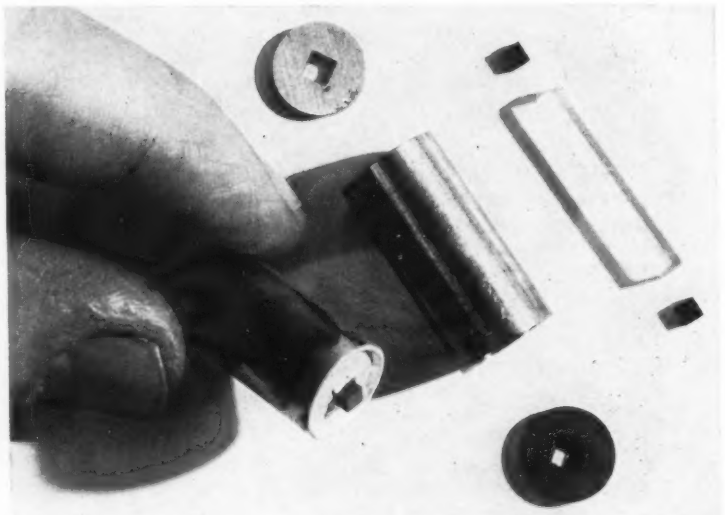
Instead of utilizing a low-powered transmitter as is used for industrial purposes, many telephone companies use an a-m transmitter for a base station having an unmodulated power input of nearly 400 watts, and operating in the common carrier band at about 35 megacycles. One fixed base station transmitter is the Budelman B-250-VA4. A fixed antenna in common use with this service is built by the Andrew Corp. and is known as the type 900-HA1, a non-directional antenna designed to withstand substantial wind-loading.

In the next installment of this section, the editor will discuss additional considerations which are to be reckoned with in establishing a service of this type.

ULTRASONIC TRANSDUCER

A NEW, efficient device for converting electrical energy into ultrasonic energy and vice versa at microwave frequencies was described recently by D. L. White of Bell Telephone Laboratories. The device is a piezoelectric transducer utilizing a semiconductor depletion layer. It is expected to be employed primarily in ultrasonic delay lines where its operation at high frequencies and wide bandwidths will make it possible to store large amounts of information.

Another possible use will be as a tool for studying the acoustical properties of materials at higher ultrasonic frequencies. It is anticipated that large-amplitude ultrasonic waves can be generated in materials at microwave frequencies, and also extremely weak waves can be detected with greater efficiency than with existing transducers, Mr. White stated.



Exploded view of an ultrasonic delay line using two Bell Telephone Laboratories depletion layer transducers. Small blocks of piezoelectric semiconductor (gallium arsenide), with thin metal films deposited on their surfaces, are bonded to the ends of a one-inch-long quartz crystal which serves as the delay medium. Ultrasonic waves are generated and detected in the thin (about 10^{-3} cm.), flat, high-resistance regions called depletion layers which are formed in the piezoelectric semiconductor next to the quartz bar.

The new Bell Laboratories transducer consists of a plate of piezoelectric semiconductor (such as gallium arsenide) on which a thin metal film is deposited. The film constitutes a nonohmic rectifying contact which causes a depletion layer to form. (A depletion layer, Mr. White explained, is a thin region of high resistivity that forms at the interface of two dissimilar materials such as a p-n junction in a semiconductor or a rectifying metal-to-semiconductor contact. The difference in Fermi levels of the two adjacent materials usually gives rise to an internal electric field which sweeps or "depletes" the thin interface region free of mobile charge carriers, thereby increasing its resistance.) The thickness of the depletion layer can be controlled with a negative bias voltage across the interface.

When an ac voltage is applied, most of the voltage drop occurs across the layer and the layer behaves in a manner similar to a very thin piezoelectric crystal which is bonded to a solid. Since the layer is thin, 10^{-2} to 10^{-5} cm, the electric field is very large and considerable piezoelectric stress can be produced in the layer.

Mr. White pointed out the depletion layer transducer has several advantages over an ordinary transducer:

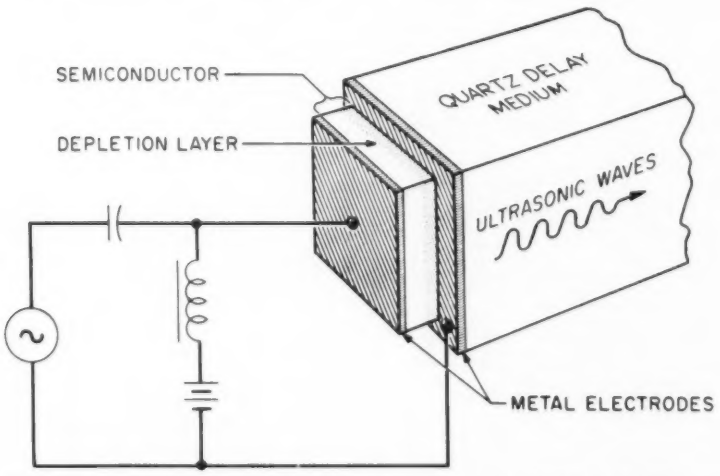
(1) Because the layer is so thin, the greatest efficiency of the transducer is at very high frequencies. Current models operate at under 1000 mc but the frequency range is expected to be extended to above 10,000 mc. In this high frequency range, this transducer should be as much as 100 times more efficient than any other known transducer. With a highly efficient transducer, small electric signals can generate ultrasonic waves and very weak ultrasonic waves can be detected.

(2) The thickness of the layer, hence the resonant frequency of the transducer, can be varied by varying the dc bias voltage. This adds great flexibility to its use. (Conventional piezoelectric transducers do not have this feature.)

(3) Present models measured at 600 mc have a bandwidth of 5 per cent (30 mc), an order of magnitude larger than typical ceramic transducers, operating at frequencies below 10 mc. This means that a comparable increase should be expected in the amount of information which can be transmitted. It is expected that, with operation at higher frequencies, even wider bandwidths can be achieved.

(4) The transducer is relatively simple to make and easy to handle.

Up to now, the use of ultrasonic delay lines at high frequencies has been limited because ultrasonic waves could not be generated or detected efficiently at microwave frequencies, and furthermore, were considerably attenuated in the delay material. However, now the higher efficiency of the depletion layer transducer makes up for these losses and makes possible delay lines having longer delay times. This, with the large bandwidth characteristic, will enable large amounts of information to be stored.



Schematic of Bell Telephone Laboratories new depletion layer transducer attached to a quartz crystal. The depletion layer forms in the piezoelectric semiconductor at the interface between the semiconductor and a thin metal electrode. Electric signals applied to the layer are converted to ultrasonic waves.

In experiments at Bell Laboratories, the new depletion layer transducers operated well at frequencies as high as 830 mc. It is expected that improvements in circuit and fabrication techniques will extend the frequency range.

CONNECTOR STANDARDS

THE LOSS of power in radio-frequency circuitry, especially between transmitters and their associated antenna components is often a case of lack of precision in adaptors and connectors. The losses as a result of such discontinuities become large enough to considerably impair operation.

In an attempt to reduce the errors in precision measurements which may be due to connector uncertainties in coaxial components at radio and microwave frequencies, a one-day meeting will be held on June 29 at the Boulder Laboratories of the National Bureau of Standards, Boulder, Colo.

It is expected that many reductions in errors may be resolved by agreement of design, size, tolerance, etc. of minimum numbers of connectors incorporated in the design and manufacture of precision instruments.

Papers covering subjects such as dielectric materials for supports in connectors, power handling capacity, upper frequency limits of connectors, and adaptors for differing diameters and impedances will be among the areas discussed.

EQUIPMENT CATALOG

A NEW CATALOG is now available from Hewlett-Packard Co. containing complete listings, descriptions, and specifications of some 400

test instruments manufactured by the company. Also contained within the catalog is a 16-page descriptive listing of special systems and instrumentations produced by the company's Dymec Division.

The equipment groups include oscillators, power supplies, audio generators, square wave generators, distortion analyzers, ac and dc voltmeters, amplifiers, frequency and time measurement equipment, microwave equipment, primary frequency and time standards and other test instrument groups. Included also are price listings.

The new catalog may be obtained from H-P representatives or by writing to Harry J. Lewenstein, Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto, Cal.

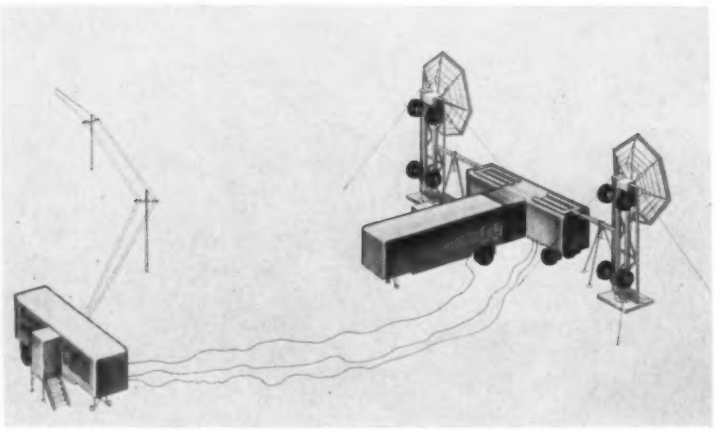
TROPOSPHERIC SCATTER

A NEW completely mobile tropospheric-scatter communications system has been designed for the U. S. Air Force by Page Communications Engineers Inc., a Northrop Corp. subsidiary.

The new system, designated AN/MRC-85, consists of a 28-foot paraboloidal antenna mounted on each of two 4-wheel trailers, and three 2-wheel semitrailer equipment vans.

Two of the semitrailer vans are to house and transport dual 10-kilowatt transmitters and their associated equipment — parametric amplifiers, exciters, test equipment, quadruple diversity receivers, multiplex, both for voice and telegraph, signaling equipments, heating and air conditioning units, distribution frame, maintenance facility, and storage.

It was also explained that a third "semi" houses two 150-kilowatt generators with associated switching apparatus to provide for 100 per cent primary power or standby power. Commercial power may be used in areas where it is available.



Mobile Troposcatter Terminal AN/MRC-85.

The parabolas are carried in "pie-slice" sections to decrease installation time and are placed in an operational position by up-ending trailers and using the trailer chassis as the tower to support the parabolas.

RADIO INTERFERENCE ANALYSIS

RADIO interference has always been a problem. It becomes magnified many times when one considers the number of man-made-device sources. The radio spectrum is becoming increasingly jammed, with consequent increasing interference, as more and more commercial and military communications are established in this medium.

Reductions of radio interference can be accomplished in many ways, perhaps the most important being reduction of the amount of information being transmitted, especially that which serves no purpose or else provides only limited information at the receiver. Other steps may also be justified.

Possible avenues for reducing interference are presently under consideration by the government. In a contract awarded to Armour Research Foundation of Illinois Institute of Technology, the Defense Department has requested technical support of a tri-service program to analyze and control radio interference in the United States and abroad.

Dr. Haldon A. Leedy, ARF director, said, "The center will function as the hub of the Defense Department's compatibility program."

Dr. Leedy further explained "that radio interference has seriously reduced the efficiency of some of today's sensitive, high-powered electronic equipment, and as a result, could affect the future missions of the Armed Forces."

The new center, designated "The Electromagnetic Compatibility Analysis Facility," will function toward two goals: "(1) to correct existing radio interference problems, and (2)

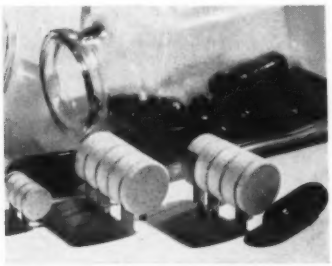
to provide guide lines for improved equipment design."

ELECTRONIC TUBE DEVELOPMENTS

AS AMERICA'S first astronaut was hurled through space, it was necessary to send information back to earth to enable doctors to perform "up-to-the-second" physical examinations of the space man's body conditions.

Special sensors attached to appropriate parts of the astronaut's body "picked up" conditions such as his heart beat, pulse rate, breathing, and temperature. The information was then relayed to a miniaturized telemetry transmitter which sent the data back to radio receivers at tracking stations.

The telemetry transmitter was said to weigh less than a pound and is only slightly larger than two cigaret packages. Although the transmitter contained transistors, according to engineers who design this type of equipment, the use of vacuum tubes in the transmitter design was necessitated as a result of non-availability of transistors that would operate satisfactorily at the required frequency and power levels. The tubes were used in the design of the power amplifier stages.



Three miniature ceramic triode tubes were used in the telemetry transmitter circuit design of America's first manned space capsule. Approximately the size of a vitamin capsule, tubes were used in the design of the power amplifier stages. Tube at left is the 7720 driver and the two tubes at right are the 7296's which were used in parallel as the power amplifier.

The tubes required for the power amplifier stages of the telemetry transmitter were tiny ceramic tubes, developed by the General Electric Co. It was reported that a GE type 7720 tube was used to drive two 7296's in parallel to produce the output signal to a power of three to four watts.

electronics training... the new way*

Almost everyone admits that the rapid growth of electronics has created problems for telephone men. The skills of yesterday are still important, but they must be augmented with a new skill . . . electronics.

How is your company solving this problem? Specialized resident programs can do the job, but they are expensive. Tuition costs, per diem allowances, transportation and salary for a minimum program can easily add up to $2,000 per man.

If you could invest in a guaranteed program at a small fraction of the above cost, would you be interested? If you could, in addition, keep your personnel in a productive status during the training period, would you be more interested?

No one can have their cake and eat it, but a Cleveland Institute program comes close to just that. Your men receive a solid foundation in electronic fundamentals, plus a Commercial FCC License, and you don't lose their services during the training period.

We would like the opportunity of sending you full details on our plan. Use the coupon below to ask for the free brochure.

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MAT NO. 1
(below)
ACTUAL SIZE:
3 columns by 10"

the STARLITE telephone

Less than half the size of a regular phone!
Takes less space on a table or desk. Now you can have a step-saving extension at hand even where space is limited.

Style-right wherever you place it.
Use the Starlite in the kitchen, living room or at your bedside. And you can choose from six colors: white, ivory, beige, pink, blue, turquoise.

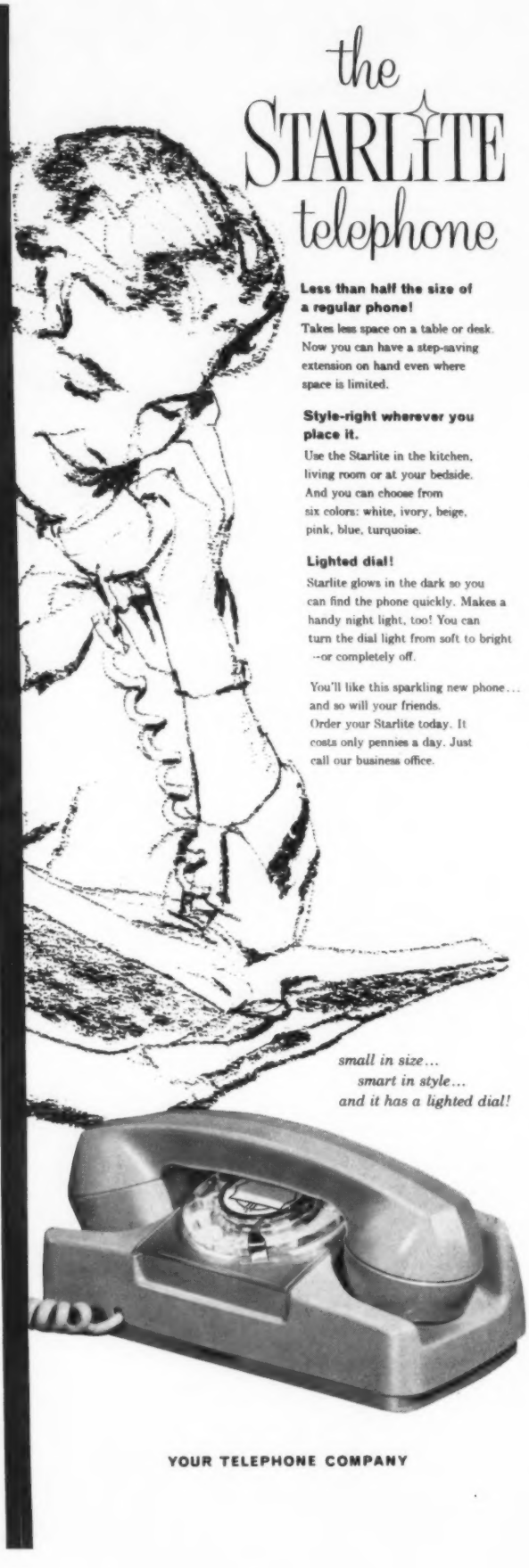
Lighted dial!
Starlite glows in the dark so you can find the phone quickly. Makes a handy night light, too! You can turn the dial light from soft to bright—or completely off.

You'll like this sparkling new phone...and so will your friends. Order your Starlite today. It costs only pennies a day. Just call our business office.

small in size...
smart in style
...and it has a
lighted dial!

YOUR TELEPHONE COMPANY

MAT NO. 2
(at right)
ACTUAL SIZE:
4 columns by 21"



the STARLITE telephone

Less than half the size of a regular phone!
Takes less space on a table or desk. Now you can have a step-saving extension on hand even where space is limited.

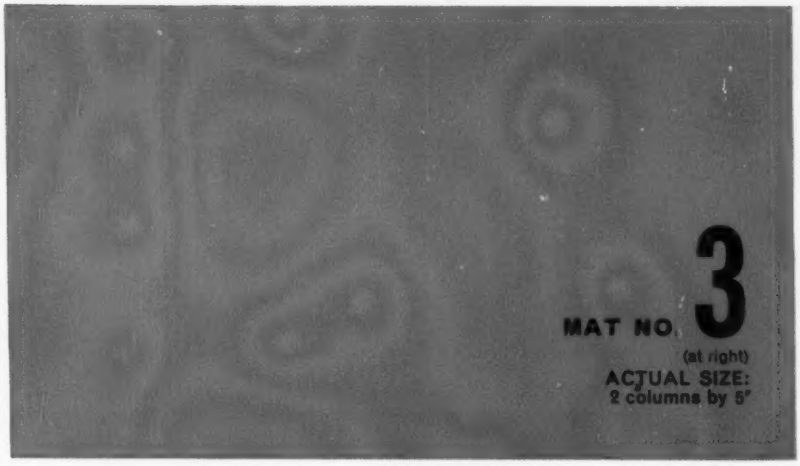
Style-right wherever you place it.
Use the Starlite in the kitchen, living room or at your bedside. And you can choose from six colors: white, ivory, beige, pink, blue, turquoise.

Lighted dial!
Starlite glows in the dark so you can find the phone quickly. Makes a handy night light, too! You can turn the dial light from soft to bright —or completely off.

You'll like this sparkling new phone... and so will your friends. Order your Starlite today. It costs only pennies a day. Just call our business office.

small in size...
smart in style...
and it has a lighted dial!

YOUR TELEPHONE COMPANY



the STARLITE telephone
small in size...
smart in style...
and it has a
lighted dial!
Saves space on table or desk. Starlite is less than half the size of a regular phone!
Smart appearance. Starlite is style-right wherever you place it. Choice of six colors.
Lighted dial glows in the dark! Helps you find the phone quickly. Makes a handy night light, too!
Order your Starlite today! It costs only pennies a day. Just call our business office.
YOUR TELEPHONE COMPANY

MORE NEWSPAPER AD MATS

To help you sell Starlite* phones!

Last Fall, we sent our customers a newspaper ad mat on the Starlite phone. The response from telephone companies was overwhelming. Because of the demand for this type of sales aid, we have produced *three new* ad mats on the Starlite phone (shown here).

These new ad mats are designed to help you promote the Starlite phone in your local newspapers. We also suggest that you ask the editor to give you tearsheets of your ads for display in your office or wherever it will be seen best by your customers. To get your free ad mats, just fill out the coupon (at right) and mail today.

*STARLITE is a trademark of Automatic Electric Company.

AUTOMATIC ELECTRIC
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS
GENERAL SYSTEM

AUTOMATIC ELECTRIC SALES CORPORATION
Northlake, Illinois
Attention: J. M. Zidlicky, Director of Sales Promotion

Gentlemen:
We want to promote the Starlite phone in our local newspaper. Please rush us your three new ad mats which feature the Starlite phone.

MY NAME IS _____ PLEASE PRINT CLEARLY

COMPANY NAME _____

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

The Plant Man's NOTEBOOK

By RAY BLAIN, Technical Editorial Director

WE HAVE RECEIVED numerous reports from operating companies concerning the difficulties that have been experienced in the installation of telephones in mobile homes. For this reason, we wrote *Trail-R-News* magazine, and asked them to urge manufacturers to provide telephone conduit in these homes, so that service could be provided without drilling holes and running exposed and unsightly wire. Mobile homes frequently remain in one location for long periods of time; and telephone service is a necessity.

We now have a letter from Art Griffin, editor-publisher of *Trail-R-News*, in which he advises us as follows:

"I have checked a number of the qualified mobile-home manufacturers; and without an exception, find them to be installing telephone jacks as standard equipment.

"I was surprised that you indicate some manufacturers do not make the above installations. You may rest assured that in my travels to midwestern manufacturers this spring and summer, I will inquire further about this in an effort to promote this essential service."

It appears that mobile-home manufacturers have finally come to realize that provision for telephone service, as well as for radio and TV, is required; and accordingly, entrance fixtures and conduit will be provided.

•

We are indebted to our friend, D. S. Guild, vice president-operations of the Hawaiian Telephone Co., for the 1960 annual report of that company.

During 1960, Hawaiian Telephone added a record 17,038 telephones to its state-wide system; and at the end of the year, it served a total of 208,411 telephones. The number of persons enjoying individual line service continued to increase while the number of persons waiting for an upgrading of service decreased.

At the end of 1959, there were 4,309 waiting for an upgrading of service, but by Dec. 31, 1960, this figure had been reduced to 1,932.

The company will continue to work toward the elimination of held regrades, although studies reveal that more customers want individual line service than ever before—59 per cent in 1960 versus 32 per cent in 1955.

•

The AT&T's 1960 annual report stated that three out of five residence telephone users now have individual line service, whereas 10 years ago, three out of four were on party lines. In addition, more and more homes have more than one telephone—nearly 1,200,000 residence extension telephones were added in 1960. It is evident that most people want, and are willing to pay for, the best grade of service.

Half of the Bell System's customers can now dial directly to distant places. In the case of several million telephones, the calling number is recorded automatically, instead of an operator coming in on the line to ask for it. During the next few years, it is planned to provide automatic recording for several million more subscribers.

•

It is reported that American telephone directories have made the "best seller" list in Poland.

In Warsaw, members of the United States trade mission were besieged with requests to see telephone directories which the Americans carried with them. Cut off from news of the free world, the Polish people were trying to learn whether relatives in the United States were still among the living.

•

The plowing in of cable has now become one of our standard methods of construction. This practice has proved to be a real economy and is, in general, satisfactory, except in cases where a 50-pair cable must be replaced by a 100-pair within a comparatively short time after installation.

In such cases, it would appear possible to plow in some type of plastic pipe. Then, cable could be pulled out and replaced by a larger size, as required, to meet changing conditions.

•

Secretary of Commerce Hodges has initiated a program to install safety belts in his department's 2,000 official vehicles. This safety program orders installation and use of seat belts in all Department of Commerce cars and trucks in the 50 states and in the District of Columbia. It also encourages the 31,000 department employes to install seat belts in their estimated 20,000 private cars.

It appears somewhat strange that more of our generally safety-conscious telephone companies have not initiated a similar program for the use of seat belts in their company cars and trucks and in employes' automobiles. Research in recent years has proved conclusively that the use of seat belts in all cars could dramatically reduce the toll of death and injury on our streets and highways.

If any of the Independent operating companies have such a program, will you please tell us about it?

"Cross Talk"

One of the most important ingredients in a recipe for speech making is plenty of shortening.

•

Bureaucracy is described as a seat of government that gets too big for its britches.

•

Modern children do not talk about running away. Instead, they threaten to defect.

LOCATING TROUBLE

Continued from page 19

tributed over a considerable distance along the cable at the fault (5 feet to 10 feet), and the insulation is broken down to form carbonized spots opposite each other on a pair, the breakdown voltage may dry out the moisture and not weld the wires together. This is true even though measurements of faults of this nature may indicate that the insulation of the pair should break down and weld the conductors. When the breakdown voltage dries out a fault of this type, it is certain to return later. And when a condition of this nature is encountered, other pairs should be tested and tried until one is located that will break down and weld the conductors.

As a rule, cable troublemen prefer to connect the breakdown voltage at a terminal, or at some point as near as possible to the moisture trouble. The application of the breakdown voltage at the mainframe may be convenient although this practice is not always desirable. This is especially true of 24 and 26-gauge conductors on which the insulation is more susceptible to damage from the high voltage current.

It is not possible in all cases to reduce moisture faults to solid trouble by the breakdown method. For these stubborn cases, the Wheatstone Bridge method of locating the fault will prove most desirable. It will be found that any moisture fault which interferes with dialing or proper operation of the switching equipment, and which cannot be broken down, may normally be located by the bridge method. This may not prove true of very-high-resistance faults which cause only cross talk trouble.

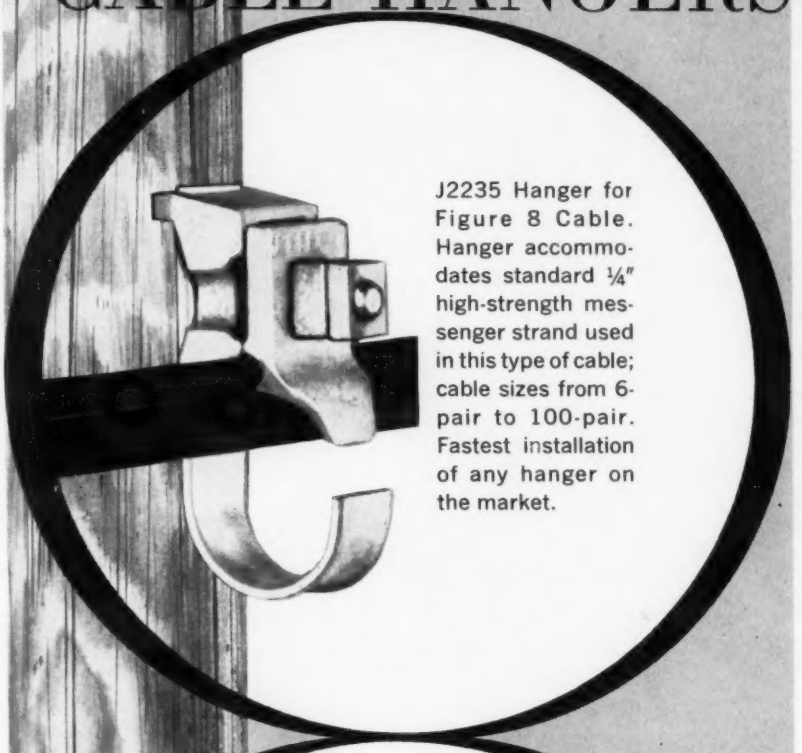
The successful location of moisture trouble by the bridge method is predicated on the fact that one clear conductor must be available in the same cable as the trouble pairs. If one is not available, then a conductor in a parallel cable or open wire may often be utilized. The simple Varley Loop method will prove satisfactory in making practically all moisture-trouble location measurements.

A recommended method of connecting the bridge for locating a short is shown in *Fig. 5*. This need not be a solid low-resistance fault to obtain good results. In this case, a good wire is available in the trouble cable and of the same gauge as the trouble pair. The formulae and calculations in this test are simple to understand.

The bridge connected to locate a short with a good 19-gauge wire, but

(Continued on page 34)

JOSLYN FIGURE 8 CABLE HANGERS



J2235 Hanger for Figure 8 Cable. Hanger accommodates standard ¼" high-strength messenger strand used in this type of cable; cable sizes from 6-pair to 100-pair. Fastest installation of any hanger on the market.

J2208 Hanger for distribution wire, accommodates .109" and .134" solid wire messenger. For supporting distribution wire up to 12-pair. Hanger can be used with or without stringing hook. Hanger is supported on pole by means of ½" through bolt or J9754 washerhead lag-stud.

JOSLYN MFG. AND SUPPLY CO.
155 N. WACKER DRIVE · CHICAGO 6, ILLINOIS

Outdoor telephones are bright beacons on a city's silent streets

Outdoor phones can be as important to a city as street lights or policemen. The unique 24-hour service and security outdoor phones give the public, plus the extra revenue they can contribute to city treasuries, make them an important part of municipal planning.

We know this. You know it. And now the Bell System is carrying this message to the city fathers in your community via a series of advertisements in *Nation's Business*, *Mayor & Manager* and *American City*.

These ads not only help build revenue for *all* telephone companies—they also express the intent of the telephone industry to provide even greater security and convenience to everyone in America.

BELL TELEPHONE SYSTEM

LOW COST...

RELIABLE
PRECISION
TRANSISTORIZED

Transmission Test Equipment

A line of portable, lightweight, transistorized test equipment designed and constructed in accordance with the highest standards of quality to meet the present and future needs of the engineer and field man, and developed specifically for the telephone industry.

MODEL TTS 4A
TRANSMISSION TEST SET

- Measuring Range: +18 dbm to −50 dbm
- Send Levels: 0 dbm to −40 dbm. Can be supplied with +10 dbm level.
- Send Frequencies: 10 fixed frequencies, including 1300 and 2300 cps, plus continuous tuning from 20 cps to 20 Kc with Model TTS 4XV accessory cover.
- Impedances: 600 and 900 ohms
- Self Calibrating
- Talk and Hold Circuits

MODEL TTS 15A TRANSMISSION TEST SET

- Measuring Range: +8 dbm to −30 dbm
- Send Levels: 0 dbm to −30 dbm
- Send Frequencies: 8 fixed frequencies including 1300 and 2300 cps
- Impedances: 600 and 900 ohms
- Switchable Hold Coil
- Switchable Termination: 900 ohms +2 mf
- Simultaneous Send and Receive

MODEL TTS 18A LEVEL and DC CURRENT METER

- Level Ranges: 0 dbm to −20 dbm and −10 dbm to −30 dbm
- DC Current Range: 0 to 100 ma
- Dial Through Provisions
- Battery Check
- Wide Frequency Response

Other instruments available from Northeast Electronics Corporation include Single Frequency and Multi-Frequency Reference Tone Generators, Loop Around Transmission Test Systems, Fault Locator, Singing Point Test Set, Program Amplifiers, and RF Power Monitors.

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not in the trouble cable, is shown in *Fig. 6.* A connection for locating a ground on one side of a pair and the good wire in the same cable is shown in *Fig. 7.*

The Varley Loop method will usually prove suitable for use in locating trouble on cables that involve several different gauges. It is also desirable for testing on Stalpeth cables where the steel covering reduces the tone volume when using the exploring coil method.

PBX REWARDING JOB

Continued from page 17

Busy Reports

As a rule a very high percentage of the busy reports come from a relatively small number of extension users in a PBX. Busy reports lead to inferior service. Efforts to sell increased facilities may be the answer in the worst cases. Periodic checks should be made to disclose and correct, when possible, instances where the failure to install additional facilities has caused deterioration of the service to the company as-a-whole.

Many worthwhile suggestions relating to all phases of PBX service are originated by attendants. Their intimate knowledge of conditions existing at their particular switchboard is exceedingly valuable. Therefore, it is highly important to persuade them to be on the alert for unsatisfactory conditions and refer them to their management people so that benefit of corrective action may be obtained.

Uncompleted Calls Serious

From the viewpoint of the customer of a PBX subscriber, a satisfactory grade of service is not rendered if he fails to reach the desired extension, or if it is necessary for him to make repeated attempts to do so. This condition is substantiated by a review of service criticisms which show that approximately 25 per cent of unfavorable reactions received from customers pertain to the failure to complete local calls. While these may be considered of less serious nature than criticisms, they do represent unsatisfactory conditions experienced by customers trying to reach PBX extensions. Furthermore, from the standpoint of our PBX subscriber, ineffective calls create the following unpleasant reactions:

Unsatisfactory relations with customers.
More difficult operating conditions.
Increased operating expenses.
Increased equipment expense.

A Service Adviser has a demanding job, but it is a rewarding one. She

has no authority over the people she supervises and yet she must accomplish wonders. Like the director of a puppet show, she must know which string to pull to make her people do the things they should do, naturally and unhesitatingly. To be sure, some days she arrives home at night tired and discouraged. But she awakens in the morning filled with an eagerness to whip the problem that had discouraged her the day before. Her rewards come in the form of sincere friendships and a knowledge that through her efforts the PBX people she contacts enjoy just as cordial relations with those who use their telephone service!

SW Bell Man Saves 2 from Drowning; Gets Vail Medal

An employe of Southwestern Bell Telephone Co. at Uvalde, Tex. has received the Bronze Vail Medal and $200 in cash for saving two boys from drowning. Johnston Loman pulled the two boys, Richard Guajardo, and Bennie Navarro, from water where they had been swimming, administered artificial respiration to one boy at once, and in the meantime, instructed a bystander in how to give artificial respiration to the other boy. He also sent another bystander for an ambulance.

When the boys began to breathe again, he wrapped them in blankets and sent them to the hospital.

Of his efforts, Dr. Dean O. Dimmett at the hospital said, "I am sure that the efforts of Johnston were directly responsible for saving the lives of both boys."

Neb. Bill Imposes Penalties For Credit Card Misuse

A bill providing penalties for misuse of credit cards was passed on May 12 by the Nebraska legislature.

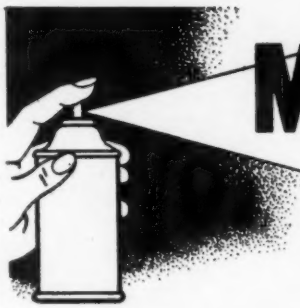
The bill prohibits use of credit cards issued to someone other than the user without the consent of the person to whom issued. It also makes illegal the use of falsified, mutilated, altered or non-existent credit cards.

For violations involving $50 or less, the offender can be fined up to $100 or jailed for 30 days. For offenses involving larger amounts, the penalty runs from $100 to $500 and imprisonment up to one year, or both.

No specific mention is made of the misuse of telephone credit cards.

Incorporate in Washington

Articles of incorporation have been filed in the state of Washington for the Krain Telephone Co., Enumclaw. Incorporators are Peter Malneritch, Harold A. Sorensen, Leonard O. Thorsett, and others.



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Spray on object to be cleaned; agitate with cloth or brush; wipe clean.

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Especially Adaptable for Cleaning, Disinfecting and Deodorizing Telephone Receivers and Transmitter Caps

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Courts and Commissions

Ill. Bell to Provide Centrex, Streamlined Business Service

Illinois Bell Telephone Co. on May 17 filed tariffs with the Illinois Commerce Commission on a new streamlined telephone service called "Centrex," which has been specifically developed to fit the needs of large business subscribers. Installations of the new service are planned for a number of Chicago businesses during 1961.

Some of the features of Centrex are: direct inward dialing to the subscriber's telephones, faster completion of incoming calls, direct distance dialing of long distance calls and identification of outgoing calls.

Incoming calls may be dialed directly to any telephone without going through the subscriber's switchboard operator. Each telephone has a seven-digit number of its own (prefix plus four numbers of the telephone). If the caller doesn't have the extension number, or know whom he wants to talk to, he calls the firm's number, which is listed in the telephone directory, and his call will be handled in the usual manner by the customer's attendant.

Toll calls will be recorded according to the number of the calling telephone and charges will be itemized on the monthly bill. With the introduction of direct distance dialing this year, users will be able to dial many of their long distance calls.

Centrex provides for complete intercommunicating service for all telephones in the system and transfer of incoming calls from one telephone to another.

Centrex systems will have small consoles, mounted on ordinary desks, for the handling of incoming calls to the firm's listed numbers, transferring of calls from one telephone to another and handling other special calls.

All Centrex subscribers will be assigned seven-digit (All-Number Calling) numbers. Each Centrex customer will have a distinctive three-digit prefix to indicate the call is for his own telephone system.

Among the companies for which Centrex service is being installed in 1961 are the American Oil Co., Peoples Gas Light & Coke Co., Continental Illinois National Bank, R. R. Donnelley & Sons Co., Swift & Co., Sears Roebuck & Co., Union Tank Car Co. and Helene Curtis Industries.

Approve Mobile Service, Key Set Rates in Nebraska

Mobile telephone service will be offered at a flat rate of $25 per month, for a trial period of six months beginning June 1, at the Hastings exchange of The Lincoln (Neb.) Telephone & Telegraph Co. The Nebraska Railway Commission on May 10 approved this rate to temporarily supersede the monthly minimum rate of $7.00, plus a charge of 5 cents per call for calls in excess of 120 per month.

In its application, the company stated that it has "many prospective customers in the Hastings exchange who have expressed a preference for a flat monthly rate for mobile service which will permit an unlimited number of calls under a predetermined charge per month."

The company has offered mobile service at its Lincoln exchange since 1947 and last year established this service at Hastings.

•

Also on this date, the commission approved an application of the Indianola Telephone Co. to establish rates for multi-line key set telephone service.

This equipment will provide: (1) Answering arrangements whereby a telephone may be connected to two or three lines; and (2) hold arrangements whereby a call may be held on one line while a call may be answered on another line.

Rates for key-type station equipment include charges for keys associated with the sets and are in addition to the regular monthly rental charge for main stations or extension stations for which the sets are used. The installation and move charges for key-type station equipment are in addition to the regular installation and move charges, and are as follows:

Main station:	
Two-line hand-set	$1.25
Three-line hand-set	1.75
Extension station:	
Two-line hand-set	1.00
Three-line hand-set	1.50
Installation charge	4.00
Move and reconnect charge	2.00

The monthly rates for intercommunication line service are as follows:

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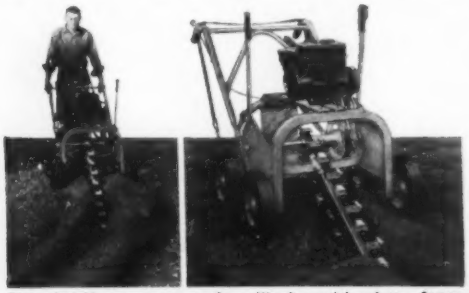

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Each station	$1.25
Each button of inter-com telephones	.25
Each buzzer of inter-com telephones	.25

The monthly rate for each trunk line used will be the regular one-party rate.

Court Upholds Wash. Law on Utility Relocation Costs

Washington Superior Court Judge Malcolm Douglas in Seattle in a decision reported on May 17, held as constitutional a state law providing for reimbursement of public utilities for relocation costs, when necessitated by interstate highway construction (TELEPHONY, Mar. 28, 1959).

The law provides for reimbursement for relocation costs along interstate highway projects, in instances where the state receives 90 per cent reimbursement from the federal government.

The bill was reported in March of 1959 to have passed the Washington House of Representatives; and it is now expected that Judge Douglas' ruling will be appealed by the state.

N. Y. Telephone Files Albany Metroplan Rate Schedule

The New York Telephone Co. on May 16 filed its Capital District (Albany) Metroplan with the New York Public Service Commission. The proposal planned to begin late in 1961, will eliminate toll charges and put telephone calling on a local basis among Albany, Troy, Schenectady, and neighboring towns.

The company received approval of its Syracuse Metroplan on Mar. 11 (TELEPHONY, Mar. 18).

The company plans, as the tolls are dropped, that rates in the Albany Metropolitan area will be raised to the level of the Colonie exchange, where extended toll-free calling has been in effect for several years.

New York Telephone General Manager Russell W. Scofield said that revenues from the new rates would fall somewhat short of the amount lost by the elimination of the tolls.

Under the Albany Metro plan, callers served by the Albany, Colonie, Schenectady, and Troy exchanges (referred to as the core area) will be able to dial any other telephone in the Metroplan area as a local call.

Mr. Scofield said the move "will increase the value of telephone service to users throughout the area . . . Businessmen as well as residence customers will find that the Metroplan expands greatly the number of prospective customers who can call them."

Other New York Telephone ex-

BUILD YOUR PROFIT POTENTIAL Reduce Testing Time and Make Optimum Use of High-Cost, Experienced Personnel

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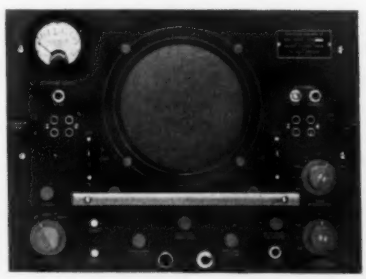

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20-gauge KRENE has dielectric resistance to 16,000 volts. Flame resistance exceeds Flammable Fabrics Act requirements.

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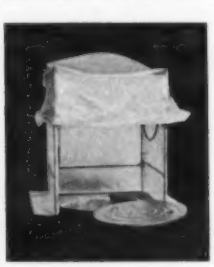

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changes which would be affected by the plan are: Altamont, Averill Park, Ballston Spa, Castleton, Clarksville, Delanson, Galway, Jonesville, Mariaville, Mechanicville, Pittstown, Round Lake, South Bethlehem, Valley Falls, and Voorheesville.

Ravena, an Independent exchange in the Albany Metroplan area, is served by the State Telephone Co. of Coxackie, which, it is reported, is planning to file a comparable rate schedule with the commission.

Under the plan, Mr. Scofield said subscribers served by neighboring exchanges will be able to dial locally to Albany, Colonie, Schenectady, and Troy, and to Metroplan exchanges adjacent to their own. Certain nonadjacent Metroplan points will be added to calling areas of some exchanges next year, it is reported. In time, these exchanges will also have local service to New York Telephone exchanges beyond the metropolitan area.

Present rates and those proposed under Albany Metroplan are as follows:

	Present	*Proposed Metroplan*
One-party residence	$ 5.50	$ 6.00
Two-party residence	4.50	4.70
Four-party residence	3.85	4.00
Multi-party residence	3.85	4.00
One-party business, 75 outgoing; unlimited incoming calls	7.85	8.00
One-party business, flatrate	15.25	17.00
Multi-party business, flatrate	5.95	6.20

Drop Toll Free Service; OK EAS For Others in Illinois

The Illinois Commerce Commission on May 19 authorized the General Telephone Co. of Illinois to eliminate toll free service between its West Brooklyn exchange and the Amboy exchange of the Farmers Telephone Co. of Lee County, Franklin Grove. The West Brooklyn exchange is scheduled for cutover to dial on Aug. 15.

•

The commission on the same date approved the establishment of extended area service from Illinois Bell Telephone Co.'s Indianola exchange to the General Telephone Co. of Illinois' Sidell exchange. Construction of facilities to provide the service is estimated to take two years, at which time rates to cover this EAS will be charged.

•

Illinois Bell was also given permission to provide EAS between its Danville exchange and the Bismarck exchange of Rossville Telephone Co. The Rossville company will also provide this service from Bismarck to Danville.

The Rossville company was authorized to charge Bismarck subscribers $1.50 extra, to cover the cost for this added service when it goes into operation.

Two N. Y. Companies Reveal Merger Plans

A merger of the Cazenovia (N. Y.) Telephone Corp. and the Midstate Telephone Corp., Manlius, N. Y., is planned, according to an announcement on May 18 by R. Philip Hart, Cazenovia president, and A. D. Jones, Midstate president. The merger is subject to the approval of the New York Public Service Commission.

Until this approval is obtained, each company will continue its separate operations.

On completion of the merger, no changes are contemplated in operating personnel. The Cazenovia business office will remain open for payment of bills, receipt of service orders, etc.

In connection with common and preferred stock and notes and bonds of the Cazenovia company, it has been decided that the new, merged company will reissue similar securities.

The new company will serve over 8,900 stations in Cazenovia, Manlius, Central Square, Brewerton, Munnsville and West Winfield.

Sullivan Named Assistant To REA Administrator

The Rural Electrification Administration has announced the appointment of James F. Sullivan as assistant to the REA administrator, effective May 5. His selection for this position was announced on Apr. 10, by REA administrator Norman M. Clapp.

In his position, Mr. Sullivan's duties will include participation in the formulation of policies concerning the development and administration of the REA telephone and electrification loan programs.

From 1948 until Apr. 1961, Mr. Sullivan was with the Wisconsin Electric Cooperative of Madison, a statewide organization of REA-financed electric cooperatives. In this position, he worked with public relations and management programs.

He was born in Montreal, Wis., and attended public schools in Hurley. In 1948, he received a bachelor of arts degree in journalism from the University of Wisconsin.

Incorporate in Nebraska

The Stockville Mutual Telephone Co., a non-profit organization, filed articles of incorporation with the Nebraska secretary of state on May 17. Incor-

"Of course I know what the trick is. He's using CF&I Galvanized Strand."

While we can't guarantee that CF&I Galvanized Steel Strand can do the old Indian rope trick, we *do* know that there's no better strand for supporting telephone cables.

As a result of some modern engineering and production techniques, CF&I Galvanized Steel Strand offers you a unique combination of strength, flexibility and corrosion-resistance. The end-result is a messenger strand that is easy to install, provides years of trouble-free service and cuts maintenance costs.

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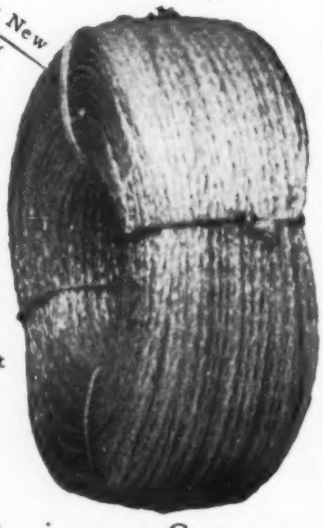

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You'll be amazed at its Strength

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porators include 20 residents of Stockville, Curtis, Bartley, Moorefield and Farnam. Resident agent is Vernon Schmidt of Curtis.

Turn Down Mich. Governor's Tax Extension Proposal

The Michigan Senate has rejected a proposal by Governor Swainson for extension for another two years of a state tax of 4 per cent on telephone and telegraph service, it was reported on May 17.

Originally, the tax was enacted in 1959 as part of a package of so-called "nuisance" taxes. The tax is said to produce about 10 million dollars a year. It is scheduled to expire on June 30.

SGT to Offer Home-to-School Communications Equipment

Details of a plan to provide special home-to-school communications equipment for temporarily homebound handicapped students in the province were announced in Regina, Sask., on May 10 by C. C. Williams, minister of telephones.

Mr. Williams said that the plan calls for the installation by Saskatchewan Government Telephones (SGT) of special two way communication facilities between the school and the handicapped student's home, by means of which the student will be able to listen to and participate in classroom discussions and lectures. He said that tests of various types of equipment are now underway and that it should be available for installation by September of this year. However, due to the facilities required, this service can only be extended to the province's local (as opposed to rural) telephone subscribers. The minister added that special permission will have to be obtained from the student's doctor and school before these facilities can be installed.

Referring to cost, Mr. Williams said the corporation will provide the service at a rental fee of $4.40 a month which will be only slightly higher than the regular private line rental in major centers in the province. The installation fee will be $5.00.

The minster concluded by saying that SGT is pleased to be an active participant in a plan to provide educational instruction to the province's handicapped who, from time to time, may not be able to attend regular classroom instruction.

Serves Red Cross

Walter A. Giles, vice president-marketing for New York (Bell) Telephone Co., has been elected to the national board of governors of the American Red Cross.

OHIOANS HOLD IDEA FAIR

Continued from page 22

and Vernon V. Hershey, Warren Telephone Co.

Following the Pioneer breakfast, Dr. G. Herbert True, vice president, Visual Research, Inc., Chicago, Ill., held his audience with a presentation on "The Importance of Ideas" which tied in with the "Idea Fair" theme of the convention.

He stressed that new ideas are needed, and if they are to be worth anything, they must be put into action and applied.

He called for new approaches, blazing new trails, exploring new areas, trying the untried, making new ideas the sparkplug of human advancement.

To build, you have to have a blueprint, he said. But, its drawing lines have to point forward. This applies to a business, an industry and a community.

He asked, "What have you done lately that's different to justify your survival in middle management?" Ideas are needed now, he expounded, to increase production, reduce waste, anticipate buying moods, cut red tape, speed up production and encourage subordinates.

He wondered aloud why executives, as they approach success, stop doing those very things that contributed most to their success in the first place. He pointed out that lives can be altered by altering attitudes.

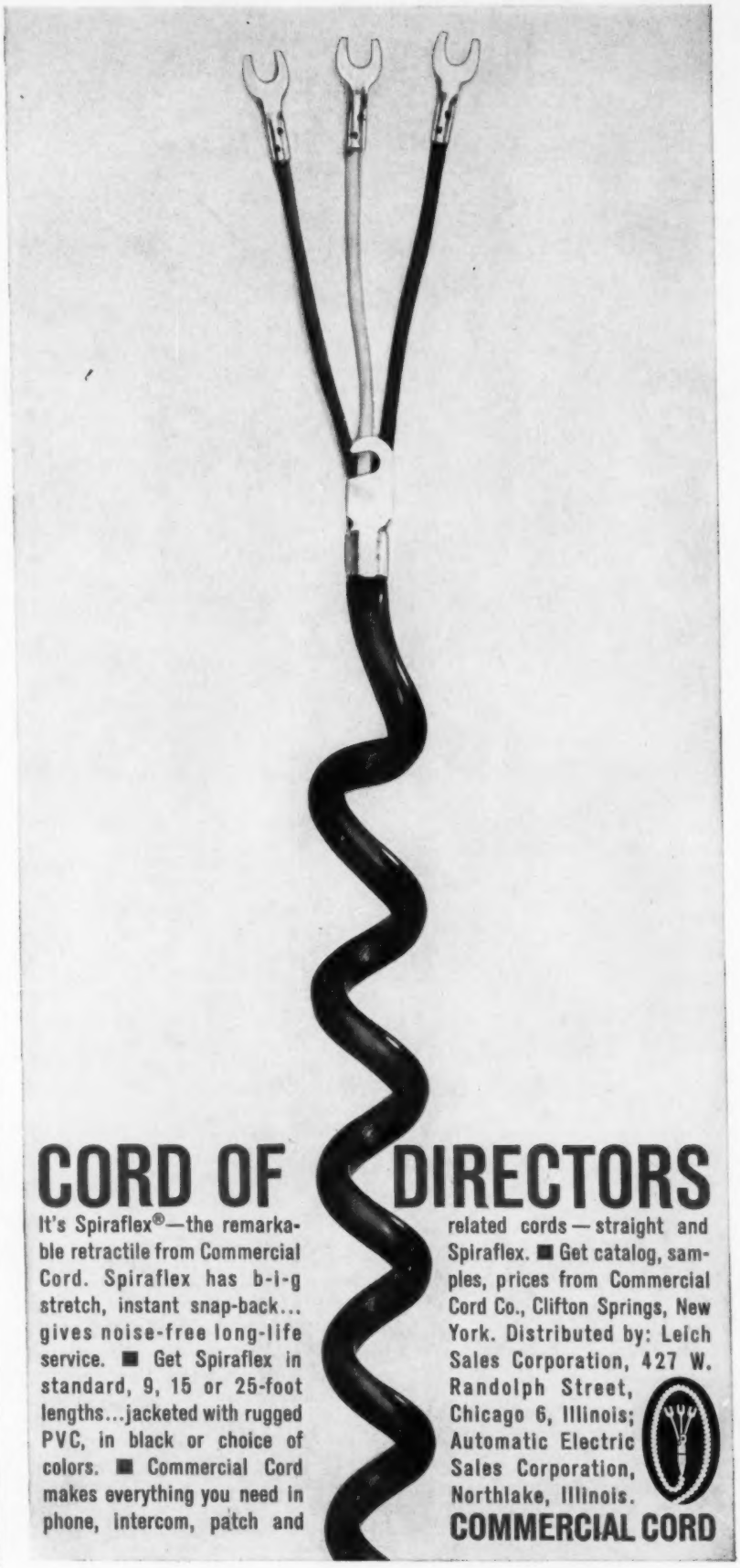
Taking as his aim the releasing of fresh viewpoints to build a creative armor against the pitfalls of habit, Dr. True said that "Today we use every substitute for thinking we can find—horoscopes, palmistry, clichés, idea killers. . . . Most of our energy is devoted to finding excuses for not thinking."

He warned that thinking is a question of attitude. Those with an attitude of thought run the risk of being unpopular.

Comparing knowledge and thought, True said that knowledge is fact, principle, law, formula, solution or result. But thought is ideas, applications, theories, questions, problems and experiences.

He called for an end to mediocrity, saying "How long has it been since you have said, 'I want to be great'? The new goal in our society today is to be average or normal, but not the best." He stressed that we should try to get away from this train of thought. We must elevate our goals.

Dr. True gave the following thought patterns, which he referred to as "idea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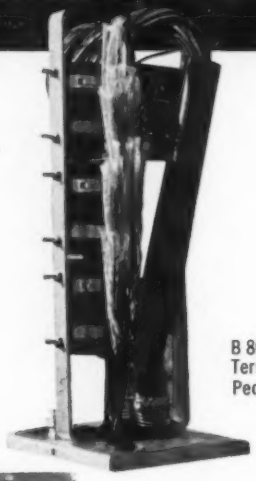
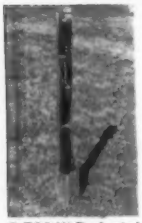


B 800 Cable Terminal Pedestal



B 700 W Pedestal

B 700 W Pedestal

B 900 Pedestal

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Made especially for construction where buried plant facilities are employed. Superior Pedestals are available in three basic terminal pedestal designs.

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killers," to explain why creativity is often squelched:

"It costs too much.
"It's been tried before.
"It isn't timely.
"It's a gimmick.
"It's too full of theory.
"We mustn't move too fast.
"Let's wait and see.
"Put it in writing.
"Form a committee.
"It doesn't conform to policy.
"It won't work in my territory."

He emphasized that fallacies often prevalent in management's evaluations of what is important, such as large numbers, bigness and speed, will never substitute for ideas, value and quality. He said: "The organization will never replace individual inspiration, and the source is not more important than the idea."

Wednesday noon the annual awards luncheon was held. Three classifications of awards were presented.

The seventh annual "beyond the call" award was presented by Mr. Gott to Willard Jenkins of Celina, a cable splicer for General Telephone Co. of O., who courageously helped rescue five men from an overturned automobile, submerged in nearly 6 feet of water in Grand Lake, Mercer County, O., last August. The award was a silver tray properly engraved to commemorate the event.

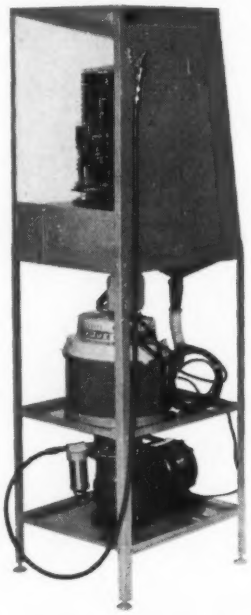
Community service awards were presented to two companies which had promoted and fostered an outstanding public relations activity during 1960. The Class A award was presented to General Telephone Co. of O., and was accepted by G. Thomas Winn of Marion, public relations director. The Class B award was presented to Continental Telephone Co. and was accepted by Robert P. Kaufman, vice president.

Two categories of safety awards were presented by J. Maynard Dickerson, chairman, Industrial Commission of Ohio, in behalf of the commission's division of safety and hygiene.

The first category of safety awards was presented in a group classification to organizations having the best safety record based on the number of man hours of labor exposed to accidents. The group safety award winners were Northern O. Telephone Co., Bellevue; Lorain Telephone Co.; Ashtabula Telephone Co.; Kenton Telephone Co.; New Knoxville Telephone Co.; Malinta Mutual Telephone Co., Inc.; and Ottoville Mutual Telephone Co.

The 100 per cent awards, the second category, were presented to companies which had no accidents during 1960. This 100 per cent group included Lorain Telephone Co.; Ashtabula Telephone Co.; Troy-Tipp Telephone, Inc.;

CLEANING CABINET



Made especially for pressure cleaning of central office equipment, switching gear, plug in units, etc. Cleaning Cabinet is completely self contained with its own air compressor and vacuum dust-gathering system. Requires only 2¼ sq. ft. of floor space. Legs are fitted with swivel base threaded glides for easy leveling. Finished with white enamel inside and neutral grey outside. Every central office needs one.

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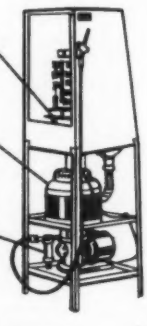
Vacuum Cleaner with 1 HP motor draws dust-laden air from inside of cabinet. Has easily replaceable dust filters.

Air Compressor (½ HP) rated 40 lbs. continuous pressure. With moisture extractor, air filter, 5' hose and blow gun.



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Ohio telephone people were honored to have as their annual awards luncheon speaker, Clifford C. Pearce, president, United States Independent Telephone Association. "The demand for communications service is just beginning," Mr. Pearce stressed. Mr. Pearce urged his fellows in the telephone industry to start planning *now* for satellite communications and other fast-breaking developments in telephony. Speaking of other developments which have been predicted, Mr. Pearce said:

"Dial-an-appliance household equipment may soon be on the market. This will enable the housewife who is downtown shopping to start dinner before she returns home. She simply telephones her home and, by dialing additional digits, turns on the oven and starts the roast to cooking. This is one time where care must be used in dialing. The wrong digit may open the garage door, start the remote control lawn mower, or give the baby a bath."

Mr. Pearce commended the Ohio association for its important contributions to the field of telephony in past years, and challenged Ohio telephone people to even greater progress in future decades.

Following the awards presentation, four "trading posts of ideas" covering the fields of accounting, commercial-public relations, plant-equipment and traffic were conducted concurrently. After the panel members gave their talks, the audience submitted questions for discussion. Chairmen, participants in the trading posts, and titles of their talks are as follows:

Accounting — Harold Rushton, auditor, Ashtabula Telephone Co., chairman.

Paul Hampton, chief engineer, Public Utilities Commission of Ohio, "The Philosophy of Depreciation in Rate Making."

T. J. Collum, director of budgets, Nationwide Insurance Cos., Columbus, "Profit Planning—the Company Budget."

Commercial-Public Relations—Joseph Yeager, commercial manager, Telephone Services, Inc., Lima, chairman.

Jack Boyd, marketing and sales manager, General Telephone Company of O., Marion, "Merchandising."

Bernard A. Deitzer, manager, sales management development, Nationwide Insurance Cos., Columbus, "Human Relations."

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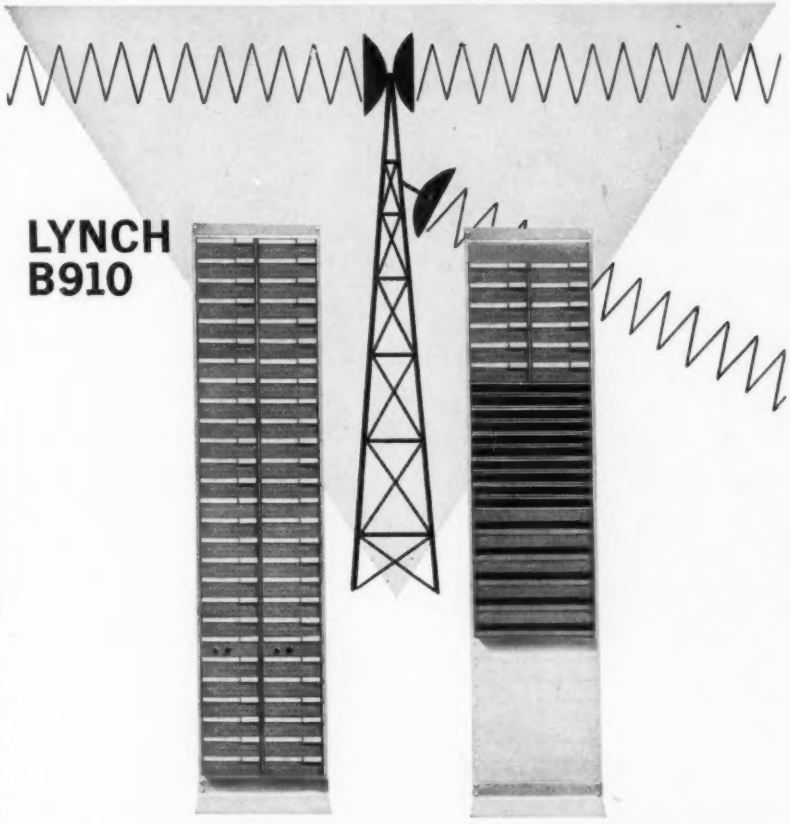

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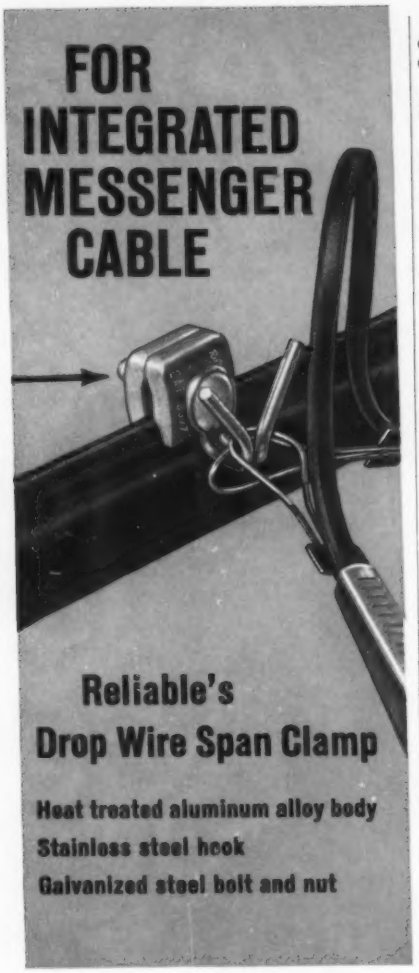

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Franklin Park, Illinois

Plant-Equipment — John Mudrak, chief engineer, Elyria Telephone Co., chairman.

Joseph Baude, director of engineering training, North Electric Co., Galion, "Training Programs for Plant Men."

Harold G. Wirtz, sales representative, Buckeye Telephone & Supply Co., Findlay, "Electrowriter Demonstration."

Movie, "Signal 30" shown by the Ohio Department of Highway Safety.

Traffic — Mrs. Florence Gaskalla, chief operator, Elyria Telephone Co., chairman.

Dr. Paul Carmack, department of speech, The Ohio State University, Columbus, "Tone of Service."

Miss Mary Smith and Mrs. Mildred Kosanovic, both of the traffic department, Ohio Bell Telephone Co., Columbus, participated with Dr. Carmack on a panel where tone of service problems were discussed.

The following directors have been re-elected: Coyne C. Bloom of Sycamore; James C. Hageman of Lorain; James I. Hunt of Middlefield; David McC. McKell of Chillicothe; J. D. Parks of Kenton and Clare E. Williams of Marion.

Robert P. Kaufman of Continental was elected to fill a vacancy on the board.

Other directors are: Howard Wright of Ashtabula; Col. William C. Henry of Bellevue; Clarence A. Beswick of Geneva; Richard R. Waltz of Delta; H. F. Clapper of Greenville; Robert D. Gott of Wellington; Weldon W. Case of Elyria; Ralph F. Mateer of Warren; George B. Quatman of Lima; Raymond J. Maxwell of Mansfield and J. Warren Safford of Troy.

Officers elected by the directors are: President, Mr. Wright; vice president, Mr. Quatman, and Daniel W. De Hayes, executive vice president and secretary-treasurer.

IN THE NATION'S CAPITAL

Continued from page 14

Hogan of New York county said he could testify "without reservation, that telephonic interception is the single most valuable weapon in the fight against organized crime." He assured the subcommittee that as an investigative tool, it "has been used sparingly and with the most selective discrimination." Hogan said his office averages about 80 taps a year and that an average of only 25 or 30 taps are going on at any one time in a county of more than 1.8 million telephones.

Without taps, Hogan said he doubted if his office could ever have convicted such top underworld figures as Charles (Lucky) Luciano, Louis (Lepke) Buchalter, Jacob (Gurrah) Shapiro, John (Dio) Dioguardia, Joseph (Socks) Lanza and Frank Carbo. "These men would be major figures in anybody's who's who of gangsters," Hogan remarked.

Hogan complained that New York law enforcement now "is virtually crippled," because of the confusion over the existing laws. He said it was with "an impelling sense of urgency" that he asked for passage of federal legislation immediately in this field. Mark Lane, New York assemblyman, speaking in behalf of Americans for Democratic Action, said the ADA "is opposed to wire tapping and eavesdropping in any form."

The only trouble with this argument about wire tapping is that it deals with something that is no longer realistic. First of all, the criminal element couldn't care less about the Federal Communications Act or anything else making wire tapping unlawful. The only parties who would be hindered (and are being hindered) are the Law enforcement agencies who cannot use wire tapping evidence to secure convictions. Criminals, of course, are very much in favor of this. Criminals did not send any witnesses, however, to testify. But one law enforcement enthusiast from New York state pointed out how silly it is to talk about wire tapping in this day and age when it is technically possible to intercept connections without touching wires or even going near the telephone.

"In today's technocracy, wire tapping is just one small way to eavesdrop," assemblyman Anthony P. Savarese Jr. told a senate subcommittee. Savarese asked Congress to overrule court decisions which forbid the states to authorize wire tapping. Congress owes it to federal and state law enforcement agencies to clear up legal conflicts over wire tapping, he said. In testimony to the Senate Constitutional Rights Subcommittee, the New York legislator said the legal issue is so confused that even the FBI is violating the law.

Senator Sam J. Ervin (D., N. C.) urged Congress to overturn a U. S. Supreme Court ruling that forbids wire tapping by state law enforcement officers. Ervin said Congress should make clear it did not intend to bar states from enacting wire tapping legislation when it passed the 1934 Federal Communications Act. He said Congress also should permit taps under careful judicial safeguards in federal crimes and allow information thus obtained to be used as evidence in federal courts. Ervin's Senate Constitutional Rights Subcommittee wound up four days of hearings on the confused wire tap laws.

Obituaries

FRANK M. MCENIRY, 80, retired sales executive of the Wisconsin Telephone Co., died on May 14 in Milwaukee, after earlier suffering a stroke.

Mr. McEniry's telephone career began in 1901 when he went to work as lineman's helper for the Central Union Telephone Co. of Rockford, Ill., his home town. He later worked as lineman, installer, repairman and switchboard man.

He also served as manager of Illinois exchanges at Warren, Moline and Galena.

With Wisconsin Telephone beginning in 1907, he became general commercial superintendent, the post which he held at retirement in 1945.

Surviving are the widow, Mary E.; two sons, Father Robert, S. J., of St. Louis, Mo.; and William P., of Whitefish Bay, Wis.; a daughter, Mrs. Robert Tillmeister, of Greendale, Wis.; two sisters, Misses Josephine and Marie McEniry, both of Creston, Ia., and two brothers, J. Gregory, of Baraboo, Wis.; and Eugene, of Creston, Ia.

•

ROBERT FROST, 41, president of Bright Star Industries, Clifton, N. J., died at his home in Briarcliff Manor, N. Y., on Apr. 13. In addition to his duties at Bright Star and its subsidiaries, Kent Energy Corp. and Charles Gulotta Co., he was vice president of the National Pneumatic Co., Inc. of Boston and its Holtzer-Cabot and Janette Divisions.

A native of New York City, Mr. Frost attended St. John's University and Pace Institute. He became a paraplegic as a result of an accident suffered while serving with the Air Force during World War II. Thereafter he became active in veterans' organizations, including Eastern Paralyzed Veterans Association, Paralyzed Veterans of America and the 52 Association of New York. He served, at various times, as president of all these groups. With his wife, the former Alma Mitskas, he coauthored the "Handbook for Paraplegics and Quadraplegics."

In addition to the widow, he is survived by a son, Peter; his parents, Mr. and Mrs. Charles Frost of New York; a sister, Mrs. Arthur T. Levine of Scarsdale, N. Y.; and three brothers, Richard of Boston, William of New York and Theodore of Westport, Conn.

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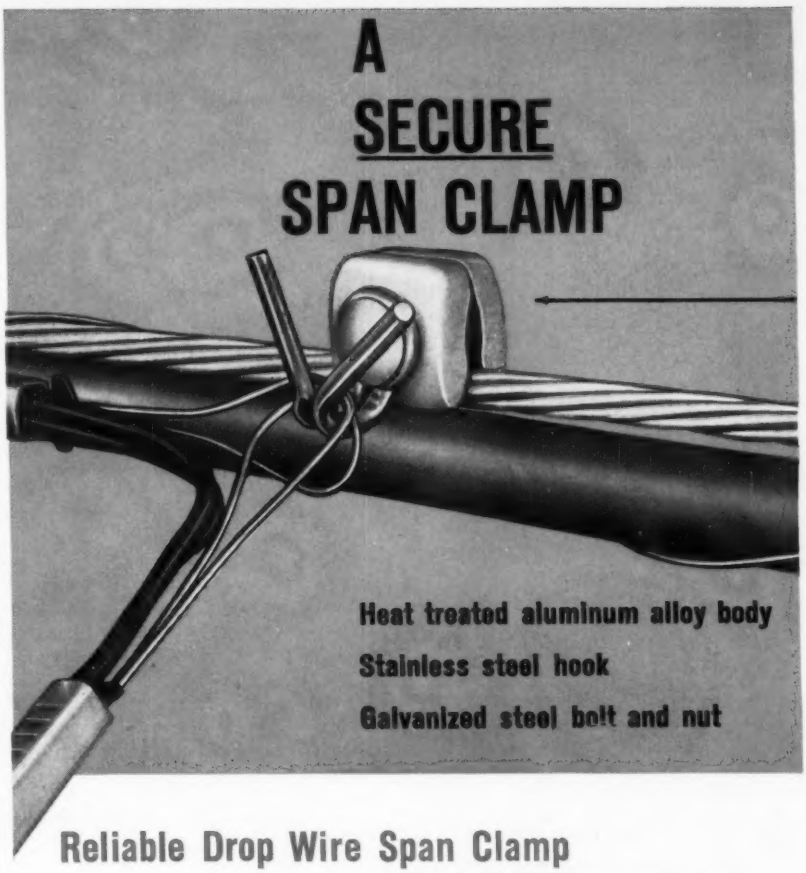
"An honest reputation is within the reach of all men; they obtain it by social virtues, and by doing their duty. This kind of reputation, it is true, is neither brilliant, nor startling, but it is often the most useful for happiness."—DUCLOS.



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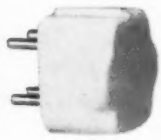

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GT&E Announces Progress On Space Echo Suppressor

Scientists of General Telephone & Electronics Corp. on May 22 introduced an electronic device, an "echo suppressor," designed to solve one of the basic problems of space communications.

Emphasizing that the echo suppressor still is in the developmental stage, the scientists said the device is designed to "silence" echoes which would occur in telephone conversations between widely separated parts of the world, using a space satellite as a relay station. The device was displayed at the Global Communications Symposium (Globecom), sponsored jointly by the American Institute of Electrical Engineers and the Institute of Radio Engineers.

According to Dr. Herbert Trotter Jr., president of General Telephone & Electronics Laboratories, GT&E research subsidiary, telephone communications employing a satellite system would be unfeasible unless such an echo-reducing device were part of the system. He pointed out that the echo of an individual's voice, while not rendering speech completely unintelligible, would have the "inevitable effect of leading the speaker to enunciate too slowly and jerkily, and would interrupt trains of thought, thus resulting in unsatisfactory or even worthless conversation."

However, he added, the GT&E "echo suppressor" would enable a satellite system to carry "natural telephone conversations."

Dr. Larry Hunter and James Stewart of the GT&E Laboratories operation in Menlo Park, Cal., inventors of the device, described the "echo suppressor" as being capable of operating in two "modes."

In "mode 1" there is complete echo suppression while one person is "doing all the talking" without interruption from the person on the other end of the circuit. An open switch breaks the circuit in the non-used direction of transmission so there is no path by which the echo may return to the talker.

"Mode 2," according to Dr. Hunter and Mr. Stewart, becomes operable in the device—automatically and not noticeable to the talkers—when one person is talking and the other person interrupts. In "mode 2," they stated, "partial echo suppression is achieved by inserting 'loss,' or attenuation, in the transmission paths. If the same amount of 'loss' is inserted in each path, the echo suffers twice as much loss as the signal, and therefore, with a reasonable amount of 'loss,' the echo becomes unnoticeable while both speakers are talking." In this "mode," the switch must be closed to permit transmission in both directions at the same time. Closing the switch makes it possible for the echo to return to the talker. To reduce the effect of this echo, "loss" is introduced by electronic methods of control.

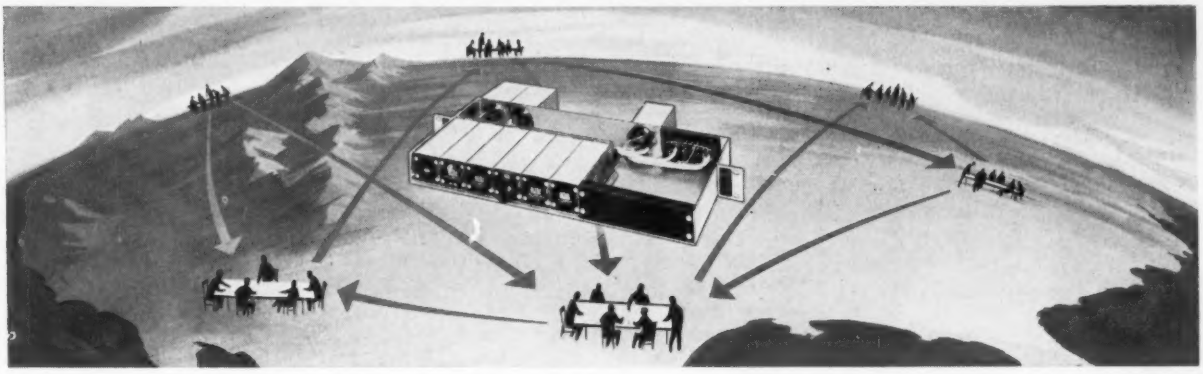
The two scientists said their work in developing the device indicates that "with partial echo suppression during interruptions and with complete suppression for normal conversational interchange, high quality telephone service by means of satellite systems will be possible."

They said the complex device could be adapted to either low-altitude or high-altitude satellite systems, and also to long-range land-line systems.

General Telephone & Electronics has recommended to the Federal Communi-

This newly designed and fully integrated Data-Phone set in the 200 Series, the 202A, marks the first production change in exterior housings for the Bell System's family of Data-Phone units (TELEPHONY, May 20). All models now available and most of those under development eventually will be fully integrated and available in one of three standardized sizes. The 202A will be available this fall. It enables business machines to transmit data via the regular, high-grade telephone voice network at speeds up to 1,600 words per minute or 1,200 bits per second.

NEW...ALTEC LOUDSPEAKING TELEPHONE SYSTEM FOR INTER-OFFICE TELEPHONE CONFERENCES COAST-TO-COAST



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Coast-to-Coast inter-office telephone conferences with many talkers at each location are now possible with the new ALTEC 7302 Loudspeaking Telephone System. The 7302 is a fully transistorized system that maintains uniform talking and listening levels regardless of distance with speech transmission of such great fidelity that familiar voices are recognizable instantly. With an effective audio coverage of a large size executive office, the system offers freedom of movement and comfortable hands-free operation to large groups of talkers.

The 7302 operates on *existing telephone lines* in conjunction with type 510 set or equivalent. Associated ALTEC equipment includes the 755C Loudspeaker and one of the following ALTEC Cardioid Microphones: Models M-30, 683A, or 685A. The 7302 mounts in standard 19″ relay rack and occupies only 1¾″ rack height. Power is supplied to the system from central office or PBX quiet battery supply of 24-26 v DC.

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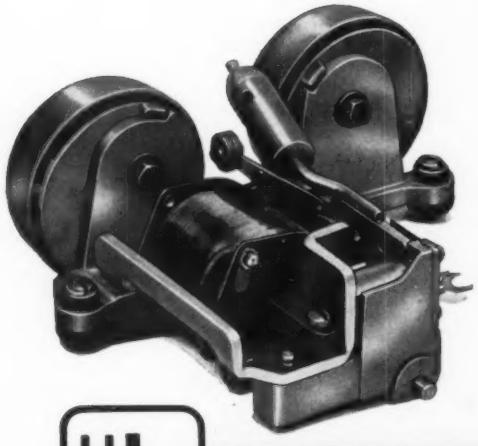

The USI Multi-frequency Ringer is designed to fit any "500" type telephone set that will accommodate a WE Type "C" ringer.

This ringer features a patented mechanical tuning system that is independent of the tapper and gongs.

USI Ringers have lower current requirements. You can reduce interference to adjacent circuits with USI Ringers and use more ringers on a given line.

The extra high impedance of USI Multi-frequency Ringers reduces voice frequency loss.

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cations Commission that the nation's communications companies be authorized to form a single jointly-owned space communications company (TELEPHONY, May 13). Dr. Hunter and Mr. Stewart were members of a team from GT&E Laboratories which undertook a study of satellite communications, and found that echo problems must be studied and solved for both low-orbit and high-orbit systems.

The high-altitude system would have three or four synchronous satellites placed equidistant around the equator, each at an altitude of 22,300 miles and orbiting at the same angular velocity and in the same direction as the earth's rotation. The satellites would be "stationary" in that they would remain over the same point on the earth's surface. Because the satellites would be stationary, each ground station with its fixed antenna would constantly be in "line of sight" with one of the satellites. The ground stations would transmit signals to the satellites which in turn would relay the signals to ground receiving stations located throughout the world. At least 20 ground stations would be required for world-wide coverage, although the exact number would depend on the availability of suitable ground communications in various sections of the world, the company stated.

The lower-altitude system would use 40 or more satellites launched into random polar orbits about 3,000 miles high. Because they would be in random orbits not paralleling the direction of the earth's rotation, the individual low-altitude satellites would not be in constant contact with any single ground station. As a satellite passed out of sight of a ground station which was transmitting via the satellite to another ground station also in line of sight of the satellite, both stations would rotate their antenna to establish contact with an oncoming satellite. This switching process would require equipment capable of solving mechanical and electrical problems not present in a high-altitude system with its fixed line of sight between satellite and ground stations, GT&E pointed out.

Tex. Company Reports Jacobs Retirement, 2 Other Changes

The board of directors of the Gulf States Telephone Co., Tyler, Tex., on May 9, accepted the request of C. W. Jacobs, corporate secretary, that he be retired effective June 1. Mr. Jacobs has had 60 years of service with the present and predecessor companies.

This telephone veteran began his career as an office boy at Groesbeck, Tex. in 1901. In 1907, the late Judge S. A. Lindsey, company founder, appointed him manager of the Groesbeck exchange.

When the company was incorporated as the Gulf States Telephone Co., in 1911, Mr. Jacobs was transferred to the general office at Tyler as treasurer; and for the past 41 years, he has served as auditor, in which capacity he visited many local offices. In addition, he has been the corporate secretary since 1930.

In retirement, he and his wife expect to travel extensively over the United States and Canada, and will visit many places they never had time for before.

Other top-level organizational changes announced in Gulf States personnel include:

Rolla L. Johnson, general manager, who was made vice president and general manager, and also a member of the board of directors.

Lewis L. Bell, assistant auditor, was elected corporate secretary and auditor, succeeding Mr. Jacobs.

EDITOR'S NOTE: As TELEPHONY went to press, news was received from the Gulf States company that C. W. Jacobs, 77, died on May 21 in Santa Monica, Cal. Mr. and Mrs. Jacobs had gone to the West Coast for an extended vaca-

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tion, having arrived there only hours before his death.

Mr. Jacobs was born on Feb. 2, 1884 in Park County, Ind. He resided in Texas all of his adult life.

Warner, GT&E Head, Named To Board, Dunlap & Associates

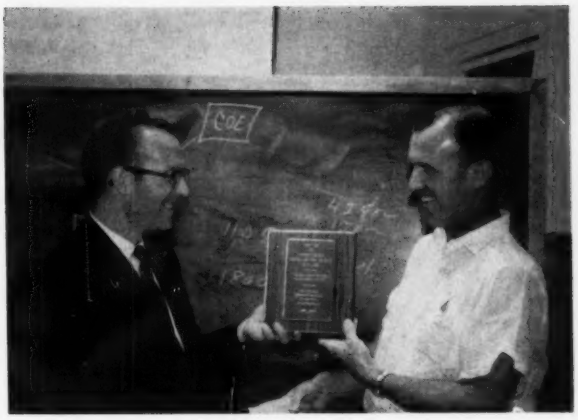
Leslie H. Warner, president of General Telephone & Electronics Corp., has been elected a director of Dunlap & Associates, Inc., according to an announcement by Dr. Jack W. Dunlap, president of the Stamford, Conn., research-consulting firm.

Mr. Warner was elected president of General Telephone & Electronics Corp. on Apr. 19, having served previously as executive vice president—manufacturing.

Rural Company Men at North Carrier School in Kentucky

The North Electric Co. of Galion, O., conducted a three-day carrier school for the REA telephone companies in Kentucky, on Apr. 25, 26 and 27, at Mammoth Cave Hotel. The instructor, Vernon Hedges gave construction information to 11 companies, which were represented by their managers, engineers, switchmen, and combinationmen.

The meeting, besides offering technical assistance, also gave telephone personnel an opportunity to combine business with pleasure because of its location at Mammoth Cave.



Dean A. Stranathan (left), manager of the Ballard Rural Telephone Corp., Inc., La Center, Ky., presents an appreciation plaque to Vernon Hedges, North Electric Co. instructor, who conducted recent carrier school for personnel of 11 rural telephone companies in that state.

Enthusiasm was high at the meeting; and the telephone system group gave Mr. Hedges a plaque for his teaching contribution.

Attending the carrier school were:

W. W. Thomason, general manager; and James P. Collins, switchman, of the Northeastern Telephone Co.

Walter F. Gearhart, combinationman, of the Harold Telephone Co., Inc.

Gene Dunn, switchman, of Mammoth Cave Telephone Co., Park City.

Juitt Deweese; and Dean A. Stranathan, manager, of Ballard Rural Telephone Corp., Inc., La Center.

J. D. Tobin, manager; and Jackie Simmons, combinationman, of Brandenburg Telephone Co.

Grover A. Corum, manager; and Joe Chaney, switchman, of the Logan County Rural Telephone Cooperative Corp., Inc., Auburn.

Billy Joe Albany, assistant manager; and W. R. Adwell and James W. Albany, both switchmen, of The South Central Rural Telephone Cooperative Corp., Inc., Glasgow.

W. L. Parr, manager; and Edgar Parr and Ken Adams, both engineers, of the West Kentucky Rural Telephone Cooperative Corp., Inc., Mayfield.

O. L. Schureman, manager, of Duo

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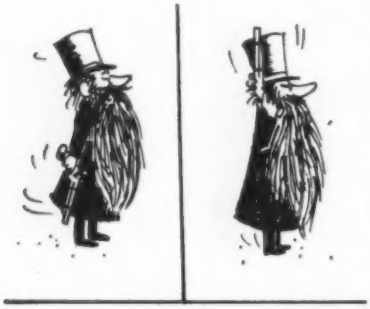

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County Telephone Cooperative, Inc., Jamestown.

J. Harold Lovelace and Robert Stewart, both senior engineers of the firm of Cottrell & House, Nashville, Tenn.

N. H. McFarlin Market Head ITT Kellogg C.O. Department

Norman H. McFarlin has been appointed marketing manager, Central Office Equipment department of ITT Kellogg, a division of International

N. H. McFARLIN

Telephone & Telegraph Corp. The announcement was made by G. A. Strichman, president of ITT Kellogg.

In his new position, Mr. McFarlin will be responsible for marketing the company's switching products to the Independent telephone industry.

For the past several years, Mr. McFarlin has been connected with the telephone program for the Rural Electrification Administration as assistant administrator.

Previously, he served as vice president and general manager of the Montezuma (Ia.) Telephone Co. and was also engaged in the practice of law with his father, Clyde McFarlin.

A native of Montezuma, Mr. McFarlin has been associated with the Independent telephone industry for more than 20 years, and is a member of the Independent Telephone Pioneers Association.

Walter Witte has been appointed to the sales department of Reliable Electric Co., and will be located in Franklin Park, Ill. He will be responsible for providing customers and distributors with general and specific product application information. Witte received a B.S. degree from Iowa State College in 1952, and has since been with the Cook Electric Co.

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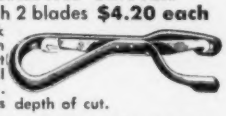

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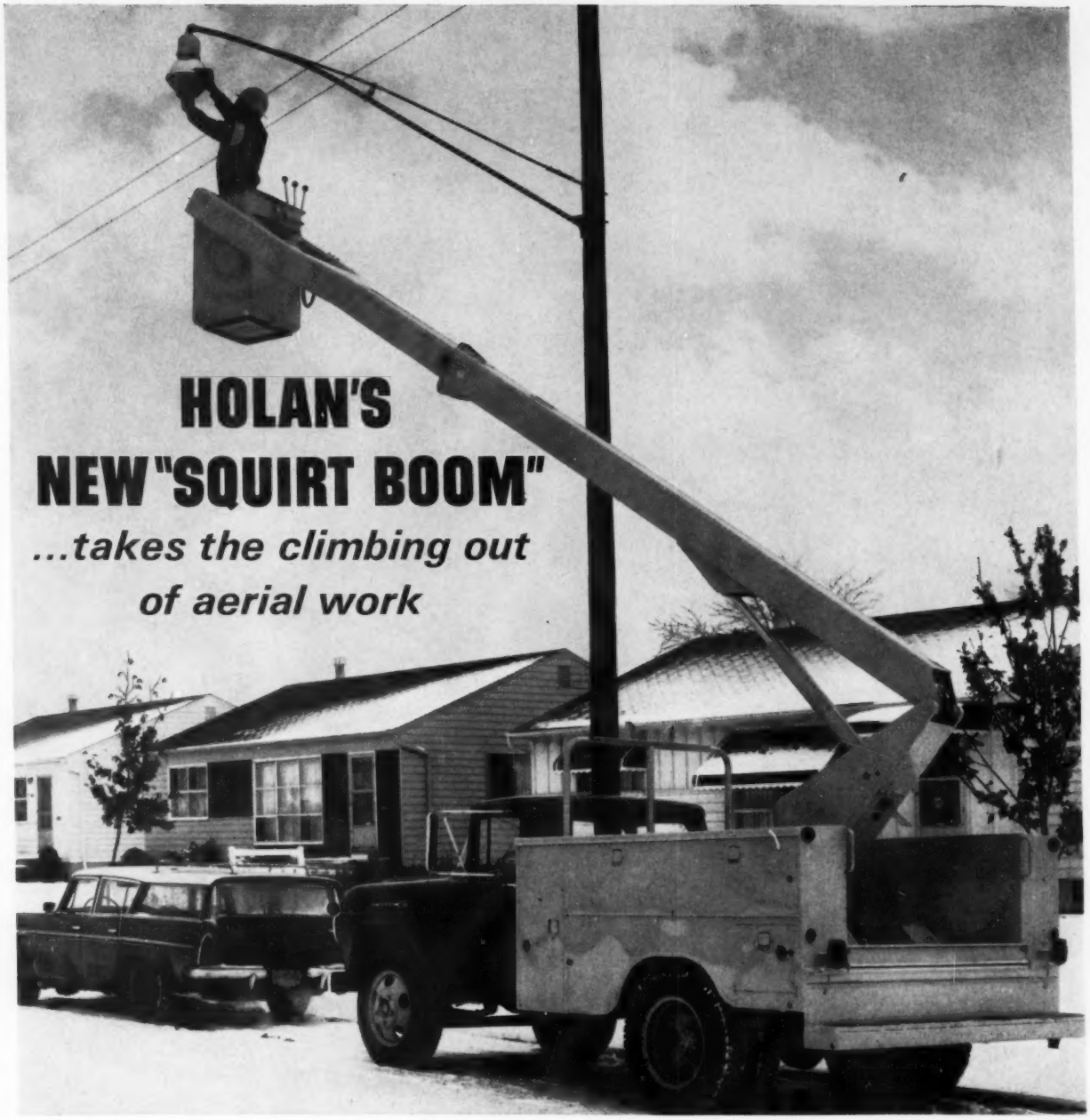

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